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Exploring a Micro-level Approach Towards Corporate Sustainability
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LEONIE DECRINIS

NUDGING IN THE WORKPLACE: EXPLORING A MICRO-LEVEL APPROACH TOWARDS CORPORATE SUSTAINABILITY
Nudging in the Workplace

*Exploring a Micro-level Approach Towards Corporate Sustainability*

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FOREWORD

About three years ago, I embarked on my PhD journey from my desk in Vienna, with many parts of the world being locked down due to the pandemic. Starting a new job and research endeavour remotely was not without challenges, at times feeling lonely and not really knowing where the path ahead would lead to. Despite these uncertainties, it has been a real pleasure from the very beginning to delve into a subject I am passionate about and managing my own research project. Furthermore, even though physically separated, having a supportive virtual network was crucial. Upon my arrival in Copenhagen, I came to fully recognise the value of the research community I had joined. Sharing the highs and lows of doing a PhD together with remarkable colleagues and friends has been what truly enriched this experience.

It goes without saying that I am profoundly thankful for receiving a fully funded scholarship from the Department of Management, Society and Communication (MSC), which made this PhD project possible. Moreover, I would like to convey my profound gratitude to those who supported me during the process of completing my dissertation.

First and foremost, I am grateful to my exceptional supervisors, Jeremy Moon and Andreas Rasche, for believing in my thesis from the very outset and for supporting me throughout its completion. Jeremy, your brightness, boundless creativity, and unwavering dedication to supporting junior scholars truly set you apart. You have not just provided guidance but also encouraged me in following my ideas, extending both professional and personal support that I deeply appreciate. Equally bright and fun, Andreas, your remarkable expertise and ability to convey complex ideas with clarity and precision are strengths that greatly enhanced the supervision process. The feedback you offered was always to the point and instrumental in improving the quality of my papers. Thank you both for consistently dedicating your time to review drafts, discuss my concerns, and prioritise my research, even amidst your own demanding deadlines and work commitments.

I also want to extend my gratitude to Lucia Reisch for your dedicated mentorship and unwavering support. You have believed in me and my work from a very early stage of my career, opened new prospects along the way, and provided me the opportunity to experience the distinctive research environment of your Institute at Cambridge Judge Business School. Thank you too for your productive co-authorship and for introducing me to my other co-authors, Wolfgang Freibichler, Micha Kaiser, and Cass Sunstein, whom I would equally like to thank for their inspiring collaboration.
Thank you to my great colleagues at MSC for creating such a warm and welcoming work environment. First and foremost, I would like to extend gratitude to all the PhD fellows at MSC, many of whom have become friends. Your continuous inspiration, encouragement, and companionship have been indispensable throughout the past three years. Having such a lively PhD community is a big treasure. You provided a space to laugh and to share moments of joy.

Thank you, Dorte and the entire admin team for the excellent management of the department, ensuring the smooth operations of MSC. You always addressed my concerns and made sure that everything runs seamlessly behind the scenes.

I am equally thankful for the support offered by Dennis, Janine, and Thilde in their roles as PhD Coordinators and Placement Officers during the past three years. You provided invaluable advice along the way.

Moreover, I would like to express my appreciation to my colleagues from the Consumer and Behavioural Insights Group and the CBS Sustainability Centre for providing a platform to share and discuss research ideas.

I am equally grateful to the supportive employees from Porsche, the organisation where I gathered the empirical data for my PhD project. Special recognition goes to our main organisational contact point, Maximilian Steiner. Without your valuable assistance and openness for collaboration, I would not have had the opportunity to access the unique dataset that nurtured our joint study.

Further acknowledgement goes to my work-in-progress seminar discussants. Thank you, Verena Girschik and Frank Wijen, for helping me to improve my work at the initial stages of my PhD. Thank you, Tanusree Jain and Oliver Hauser, for offering thorough and constructive feedback on the final drafts of my papers before submission.

Moreover, I feel honoured that Meike Janssen, Oliver Hauser, and Stephen Brammer have generously accepted the invitation to participate in the assessment committee of my PhD thesis.

There are numerous others, who deserve gratitude for offering valuable feedback in workshops and conferences that I participated in.

I am grateful to my parents, Martina and Martin, for fostering my curiosity to learn, unwaveringly backing my choices, and for being there when I needed you.

Finally, my most heartfelt gratitude goes to my husband, Paul. You have always supported me in my decision to pursue this PhD and have moved to Copenhagen with me. Thank you for being there by my side throughout the journey of completing this PhD, for cheering me up during times of frustration and for sharing the joys of success with me.
ABSTRACT

In the face of growing societal challenges and rising stakeholder pressure on companies to address these issues, this thesis explores ways to facilitate more responsible and sustainable business conduct. It focuses on micro-level organisational dynamics and assesses the application of nudging as a managerial approach to encourage behaviour change in support of corporate sustainability. Three independent papers underlie this dissertation, each providing unique insights into the research topic.

Paper 1 maps and synthesises knowledge from diverse disciplines on previously applied nudging interventions in organisations in areas relevant to corporate sustainability. It creates a comprehensive framework, compiling information on the target persons, the barriers to behaviour change, the nudging types and mechanisms, and the behavioural outcomes that the reviewed studies report. Based on the research clusters and gaps identified, the article formulates a research agenda that the two subsequent papers address and build upon.

Paper 2 presents a conceptual evaluation synthesising insights from nudging research with the literature on ethics and compliance management. It critically examines how organisations can use nudging to promote ethical conduct as an essential micro-foundation of corporate sustainability. More specifically, the article highlights uncertainty, anonymity, and injustice as barriers to ethical decision-making in complex workplace situations and defines values-oriented conditions for addressing these barriers. Based on the conditions formulated, it assesses different nudges regarding their strengths and limitations to tackle the same barriers. It provides suggestions for their improved implementation with the overarching aim of fostering values orientation within the workplace.

Paper 3 employs a field experiment to explore the use of message frames as nudges in an automotive company promoting electric mobility to support corporate sustainability. The tested nudges emphasise emotional, sustainability, and cost-saving motives for employees' adoption of electric vehicles. We find positive effects for all of these nudges, even though the durability of the nudging effects is constrained. The cost-saving message has the most enduring and strongest impact overall. The insights gained from this experiment strengthen the arguments concerning different nudging mechanisms raised by my prior two papers with practical evidence of nudging.

Collectively, this thesis contributes to the micro-level literature on corporate sustainability with knowledge about the drivers and mechanisms of employee sustainable behaviour that nudges can address. Moreover, it offers critical insights into how nudges can contribute to shaping
organisational contexts as key levers of behaviour change toward corporate sustainability. For practitioners, the findings of my dissertation provide guidance on the use of nudges to target cognitive and non-cognitive determinants of employee behaviour in support of corporate sustainability.
DANSK RESUMÉ

I lyset af voksende samfundsøkonomiske udfordringer og stigende stakeholder-pres på virksomheder for at imødekomme disse, undersøger denne afhandling måder hvorved mere bæredygtig forretningsadfærd kan faciliteres. Den fokuserer på mikroniveauet af organisatoriske dynamikker og vurderer anvendelsen af nudging som en ledelsespraksis for at fremme adfærdsændringer til støtte for virksomheders bæredygtighed. Underliggende for afhandlingen er tre uafhængige artikler, som hver især bidrager med unikke indsigter i forskningsemnet.

Artikel 1 kortlægger og udarbejder viden fra forskellige discipliner om tidligere anvendte nudging-interventioner i organisationer indenfor områder, som er relevante for virksomheders bæredygtighed. Den skaber en omfattende ramme, der samler oplysninger om målgruppen, barrierer for adfærdsændring, typer og mekanismer for nudging og de adfærdsmæssige resultater, de gennemgåede studier rapporterer. Baseret på de identificerede forskningsklynger og huller formulerer artiklen en forskningsagenda, som de efterfølgende to artikler adresserer og bygger videre på.

Artikel 2 præsenterer en konceptuelt rammeværk, syntetiserer indsigter fra nudging-forskning med litteraturen om etik- og compliancestyring. Det undersøger kritisk, hvordan nudging kan bruges i organisationer til at fremme etisk adfærd som en essentiel mikrogrundlag for virksomheders bæredygtighed. Mere specifikt fremhæver artiklen usikkerhed, anonymitet og uretfærdighed som barrierer for etisk beslutningstagning og definerer værdiorienterede betingelser med henblik på at reducere disse barrierer. Baseret på de formulerede betingelser vurderer den forskellige nudges med hensyn til deres styrker og begrænsninger i at tackle de samme barrierer og giver forslag til deres forbedrede implementering med det overordnede mål at fremme et etisk arbejdslivsklima.

Artikel 3 anvender et felteksperiment til at udforske betydningen af formuleringen af nudges i en bilproducerende virksomhed, der fremmer elektrisk mobilitet til støtte for virksomhedens bæredygtighed. De testede nudges fremhæver følelsesmæssige, bæredygtigheds- og omkostningsbesparende motivationer for medarbejdernes skift til elbiler. Vi finder positive virkninger af alle disse nudges, selvom varigheden af virkninger er begrænset. Overordnet set har beskeden om omkostningsbesparelser den længst varige og mest kraftfulle indvirkning. Indsigterne fra dette eksperiment styrker argumenterne vedrørende forskellige nudgingmekanismer, som mine to tidligere artikler har rejst, med praktiske nudging-beviser.
Samlet set bidrager denne afhandling til mikroniveau litteraturen omhandlende virksomheders bæredygtighed med indsigter i drivkræfter og mekanismer for medarbejderadfærd til fordel for bæredygtighed, som nudges kan håndtere. Derudover giver den væsentlige indsigter, om hvordan nudges kan forme organisatoriske kontekster og være en nøglefaktor for adfærdsændring til fordel for virksomheders bæredygtighed. For praktikere giver resultaterne af min afhandling vejledning om brugen af nudges til at påvirke kognitive og ikke-kognitive faktorer for medarbejderadfærd til støtte for virksomhedens bæredygtighed.
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<tr>
<td>BEV</td>
<td>Battery electric vehicle</td>
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<td>CO₂</td>
<td>Carbon dioxide</td>
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<tr>
<td>CS</td>
<td>Corporate sustainability</td>
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<td>CSR</td>
<td>Corporate social responsibility</td>
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<td>ECC</td>
<td>Employee car configurator</td>
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<td>E&amp;C</td>
<td>Ethics and compliance</td>
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<tr>
<td>ESB</td>
<td>Employee sustainable behaviour</td>
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<tr>
<td>ESG</td>
<td>Environmental, social, governance</td>
<td></td>
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<tr>
<td>EV</td>
<td>Electric vehicle</td>
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<tr>
<td>g/km</td>
<td>Grams per kilometre</td>
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<tr>
<td>ICEV</td>
<td>Internal combustion engine</td>
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<tr>
<td>IEA</td>
<td>International Energy Agency</td>
<td></td>
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<tr>
<td>LL</td>
<td>Log likelihood</td>
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<tr>
<td>NAM</td>
<td>Norm activation model</td>
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<tr>
<td>OB</td>
<td>Organisational behaviour</td>
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<tr>
<td>OCB</td>
<td>Organisational citizenship behaviour</td>
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<tr>
<td>PHEV</td>
<td>Plug-in hybrid electric vehicle</td>
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<td>RCT</td>
<td>Randomised controlled trial</td>
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<td>TPB</td>
<td>Theory of planned behaviour</td>
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<tr>
<td>VBNT</td>
<td>Value-belief-norm theory</td>
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<tr>
<td>WCED</td>
<td>World Commission on Environmental Development</td>
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LIST OF AUTHORS OF INCLUDED PAPERS

Paper 1  Leonie Decrinis, Lucia A. Reisch

Paper 2  Leonie Decrinis

Paper 3  Leonie Decrinis, Wolfgang Freibichler, Micha Kaiser, Cass R. Sunstein, Lucia A. Reisch
PART I: KAPPE
1. INTRODUCTION

This thesis explores the application of nudging as a behaviourally informed intervention approach to encourage behaviour change in organisations in support of corporate sustainability (CS). It starts with a discussion of the motivation for the research project from empirical, theoretical, and personal viewpoints.

1.1. Research motivation

1.1.1. Empirical motivation

Multiple interconnected crises, including climate change, a loss of biodiversity, rising levels of inequality, and the escalation of armed conflicts, put a safe and just future for humanity at risk (Randers et al., 2019). Urgent action by public, private, and civic actors is needed to tackle the world’s most pressing issues and move back on track towards the Sustainable Development Goals (SDGs) of the United Nations (UN) 2030 Agenda (UN, 2023). Corporations are particularly important SDG drivers because of the scope of their resources and the scale of their activities that impact society worldwide (Mio et al., 2020).

It has been argued from many quarters that firms must move beyond short-term financial orientation towards pursuing more responsible and sustainable business approaches to leverage this potential. As Unilever’s former CEO Paul Polman put it in a frequently cited newspaper review, “short-termism lies at the heart of many of today’s problems” (Confino, 2012). Thus, rather than focusing on short-term profitability, corporations should strive to coordinate their activities across the triple bottom line of “economic prosperity, environmental quality, and social justice” (Elkington, 1997, p. 2). Put differently, their focus should be on advancing CS, which refers to “managing and balancing an enterprise’s embeddedness in interrelated ecological, social, and economic systems so that positive impact is created in the form of long-term ecological balance, societal welfare, and stakeholder value” (Rasche et al., 2023, p. 8).

In pursuing CS, the emphasis of companies frequently centres on establishing sustainability policies and strategies. These policies and strategies are, of course, important aspects for encouraging sustainable business approaches (Cooper et al., 2017). Nevertheless, the achievement of CS visions and targets relies on contributions from multiple levels (Bastini et al., 2023). Alongside the formulation of organisational strategies and policies, CS depends on behaviour
change from within the corporation (Del Brío et al., 2007; Ones & Dilchert, 2012; Ramus & Steger, 2000). Strategic sustainability goals cannot be realised without the active involvement in and contributions of individual employees throughout their daily activities across all levels of the organisation (Bastini et al., 2023; Lamm et al., 2015). Ultimately, all CS activities can be traced to decisions from organisational members (Aguinis & Glavas, 2012). Even if the impact of an individual’s decision might be small, collectively, it can be significant (Stern, 2000). Therefore, it is crucial to understand what drives individual behaviour change and to develop management practices that encourage and empower employees to engage in decisions in favour of CS.

Insights into the determinants and mechanisms of employee behaviour supporting CS are still constrained (Brammer et al., 2015; Carmeli et al., 2017; Gond et al., 2017; Sabbir & Taufique, 2022), and conventional workplace interventions like training and awareness campaigns have demonstrated limited success in promoting employee engagement for CS (Dobbin & Kalev, 2019; Pellegrini et al., 2018). These factors are vital in developing the skills and knowledge required to deliver on corporate sustainability agendas (Stahl et al., 2020). They may also be critical for raising employee awareness of CS visions and strategies (Hauser, 2019). However, in actual workplace situations, people may not recall sustainability objectives, especially when contextual cues contradict these sustainability targets.

People tend to respond to the stimuli released by their immediate decision contexts rather than the principles conveyed by training and information sessions (Bazerman & Tenbrunsel, 2011). For example, at Volkswagen, employees were trained on emission regulations and the company’s sustainability objectives. Yet, when designing fuel engines, employees were guided by contextual cues that conflicted with these sustainability concerns, potentially facilitating the emission scandal (Coglianese & Nash, 2021). When analysing employee behaviour and its implications for organisations, it is therefore critical to account for the role of the workplace environment that can shape behaviour consciously and unconsciously (Norton et al., 2015). Insights on workplace initiatives that address the context-dependent nature of decision-making are still limited (Bazerman & Tenbrunsel, 2011). The present dissertation addresses this gap in the literature by evaluating the use of nudging as a context-oriented management practice to encourage employee behaviour change in support of CS, targeting both deliberative and intuitive decision-making.

According to Thaler and Sunstein (2008, p. 6), a nudge refers to “any aspect of the choice architecture that alters people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives”. Nudges were originally introduced as public
policy instruments to guide the decisions of consumers and citizens (Thaler & Sunstein, 2021) in areas such as energy conservation, food consumption, and waste reduction (Kaiser et al., 2020; Reisch et al., 2021). As low-cost, evidence-based interventions, nudges have gained popularity among policymakers while demonstrating high levels of support among their intended recipients (Reisch & Sunstein, 2016).

Due to their popularity in the public sphere, nudges are gaining increasing attention as potential initiatives in organisations to influence employee behaviour (Beshears & Gino, 2015; Ebert & Freibichler, 2017). Yet, the workplace context involves unique characteristics that must be considered when designing and implementing managerial nudges. Due to distinct situational factors, it is important to note that nudges may not seamlessly translate to organisational settings despite their proven success in consumer research (Feldman & Kaplan, 2021). Thus, there remains a need for a comprehensive exploration of nudges and their implications in organisations (Chapman et al., 2020). This dissertation addresses this interest with a specific focus on using nudging to encourage employee engagement in favour of CS.

1.1.2. Theoretical motivation

The theoretical motivation for this thesis stems from the observation that most prior CS research has focused on the macro level, studying organisational activities and the institutions that shape them (Matten & Moon, 2008; Rasche, 2012). Conversely, individual-level issues have been neglected for a long time (Aguinis & Glavas, 2012). Only within the past decade has the role of individuals experienced a rise in attention by researchers concerned with CS (Gond et al., 2017; Jones et al., 2017; Lülfs & Hahn, 2014). Yet, insights on adopting effective CS practices inside organisations remain relatively limited (Paillé et al., 2019).

This knowledge gap may be linked to the constraints of the theoretical models that frequently inform workplace initiatives. The current scholarly attention revolves around cognitive determinants of employee behaviour linked to CS while ignoring the role of non-cognitive aspects like habits and emotions in decision-making (Sabbir & Taufique, 2022). Correspondingly, most micro-level CS studies focus on awareness-raising initiatives, yielding only modest outcomes (Pellegrini et al., 2018; Young et al., 2015). Moreover, despite acknowledging the relevance of establishing supportive workplace contexts to encourage desirable change in employee behaviour (Newman et al., 2017; Goebel & Weißenberger, 2017), insights on the successful creation of such environments are still limited (Norton et al., 2015). This limitation stimulates the need for research
focusing on the workplace context and interventions that can shape it. The present dissertation addresses this gap in the literature by exploring the implementation of nudging as a context-oriented management practice to promote employee behaviour change in support of CS.

To explain how nudges can influence decisions, Thaler and Sunstein (2021) draw upon dual systems theory (Kahneman, 2012). According to this theory, human decision-making processes can be categorised into System 1 and System 2. System 1 operates automatically and quickly, using heuristics with little or no cognitive effort. System 2 functions more slowly and focuses on effortful mental activities (Kahneman, 2012, p. 21). While these systems are sometimes portrayed as functioning independently, recent behavioural science research acknowledges that System 1 and System 2 actually operate in parallel, thus refuting the notion of a strict dichotomy between these two processes (Melnikoff & Bargh, 2018). Nevertheless, it is important to note that the influence of either of these systems may outweigh specific decisions.

Since the mental capacities of our brains are limited, most of our daily choices heavily rely on System 1, which leads to efficient, though often biased, outcomes (Kahneman, 2012). Nudges can tap respective heuristics for desirable purposes, thus influencing behaviour by engaging System 1 (Beshears & Gino, 2015; Beshears & Kosowsky, 2020). They may, for example, work by arousing emotions, harnessing biases, or simplifying decision processes (Beshears & Gino, 2015; Beshears & Kosowsky, 2020). Nudges can also encourage greater deliberation in decision-making by engaging System 2. They may, for instance, rely on reminders, planning prompts, social norms, or the disclosure of decision-specific information (Beshears & Gino, 2015; Beshears & Kosowsky, 2020).

Overall, nudges can take various forms that can influence behaviour in cognitive and non-cognitive ways through changes in the context in which decisions occur (Beshears & Kosowsky, 2020). Thereby, they may be potentially influential tools to encourage employee engagement in favour of CS (Bhattacharya et al., 2022). However, the behavioural drivers and mechanisms of employee behaviour that nudges can evoke through contextual alterations must be better explored. The current thesis seeks to address this concern by studying various nudges and their underlying functions as context-oriented interventions to promote behaviour change in support of CS.

1.1.3. Personal motivation

In my previous occupation as a partnerships associate at a UN organisation, I was responsible for screening prospective business partners' sustainability performance before their engagement in
joint projects to promote progress towards the SDGs. Studying the firms’ sustainability reports on the one hand, while analysing their risk ratings and controversies provided by independent due diligence platforms on the other hand, I realised the extent of the gap between what companies practise and what they preach. This realisation raised my curiosity to understand the reasons for this discrepancy and to conduct research on how best to encourage companies to walk the talk towards sustainable business practices.

Particularly, I was interested in the role that behaviour change of organisational members played in shaping corporate activities. Since my childhood, I have been fascinated by observing people and understanding their comportment and beliefs. Growing up in a family where people with diverse backgrounds frequently came to visit, my focus became drawn to the role of cultural and social factors in shaping individual attitudes and behaviour. This background also raised my curiosity about the relevance of the context in organisations in influencing the conduct of organisational members. Depending on the work climate, it may be easier or harder for employees to act upon formally defined sustainability objectives. With my PhD project, I thus wanted to put people at the centre of attention and investigate methods to develop workplaces where sustainability visions are put into practice.

Working as a student assistant at the Centre for Consumer Behaviour led by Professor Reisch at Zeppelin University in Germany, I had the opportunity to engage with the idea of nudging as a behaviourally informed intervention strategy, seeking to shape decision-making through changes in the choice environment (Thaler & Sunstein, 2021). I have been intrigued by this approach since it accounts for the role of the context in shaping individual behaviour both deliberately and intuitively. By closely aligning the contextual stimuli with actual choices, nudges are intended to facilitate desirable decisions without forcing people into the envisioned decisions (Thaler & Sunstein, 2021). Thus, nudges are targeted but less intrusive interventions than mandates and sanctions (Thaler & Sunstein, 2021).

During a subsequent internship at the OECD, I had the chance to work with a team of researchers assigned to explore the application of nudging to improve behavioural aspects of the organisation’s operational functions. This task was exciting since using nudges in workplaces was still underexplored. It gave me an impression of the opportunities and challenges of nudging employees in organisations. Quickly, I realised the need and potential to evaluate this approach with greater depth utilising a scientific inquiry.
Jointly, these experiences and motivations inspired my PhD project on a personal level, in which I investigate the use of nudging as a managerial approach to encourage behaviour change in organisations in support of CS.

1.2. Research question and scope

This dissertation seeks to answer the following research question:

“How can the application of nudging in organisations encourage employee behaviour change in support of corporate sustainability?”

I explore this question regarding various nudges that target System 1 and System 2 processes (Beshears & Kosowsky, 2020). A popular example of a nudge primarily addressing System 1 involves enhancing the ease and convenience of engaging in desirable behaviour, such as making healthy food visible (Sunstein, 2014). Conversely, a prevalent illustration of a nudge engaging System 2 is the use of social norms that highlight what others do or approve of, for instance, concerning timely tax payments (Sunstein, 2014).

My interest lies in nudges targeting the behaviour of employees at all levels of the organisational hierarchy. Thus, I consider prospective and incumbent employees, including job seekers, rank-and-file workers, managers, and executives. The defined scope of target personnel mirrors the approach taken by previous micro-level CS research (Gond et al., 2017; Rupp & Mallory, 2015; Zacher et al., 2023).

Regarding the outcomes of interest, I focus on environmental, social, and governance (ESG) issues underlying CS. Hence, in addition to environmental and social objectives, I account for a third dimension, ‘governance’, which covers issues such as board composition, transparency, lobbying, and anti-corruption (Amel-Zadeh & Serafeim, 2019; Jain & Zaman, 2020). These issues are assumed to support and enable organisations' environmental and social concerns (Rasche et al., 2023). Overall, the operationalisation of CS in terms of ESG issues aligns with recent developments in practice, where the ESG categorisation has become the common framework to assess an organisation’s sustainability performance (Rasche et al., 2023). It is important to clarify that although the term ESG originated from sustainable investing (Amel-Zadeh & Serafeim, 2019), the focus of this thesis is not on investing. Instead, it utilises the notion of ESG to refer to workplace issues underlying CS.
Based on prior research (Bhattacharya et al., 2022; Pellegrini et al., 2018), I refer to employee sustainable behaviour (ESB) as an overarching concept comprising focal actions supporting CS across ESG domains. The ESB concept is broader than the more commonly used one of employee green behaviour (Ones & Dilchert, 2012), which only captures the environmental dimension of CS. Underlying all forms of ESB is a shared moral understanding to minimise a company’s harmful (and maximise its beneficial) impacts on society (Bañon Gomis et al., 2011). Hence, ESB can be characterised as ethical behaviour in business “that is consistent with the principles, norms, and standards of business practice that have been agreed upon by society” (Treviño & Nelson, 2021, p. 12). With my PhD project, I explore methods to encourage ESB by applying nudging to support ESG issues underlying CS.

1.3. Structure of the dissertation

Having clarified the core dimensions of my research question, I will now explain how I seek to answer it. This dissertation is structured around three independent articles that jointly address the main question. Each of these articles answers an individual sub-question. Table 1 provides an overview of all questions posed.

**Table 1: Research questions**

<table>
<thead>
<tr>
<th>Main question</th>
<th>How can the application of nudging in organisations encourage behaviour change in support of CS?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-question Paper 1</td>
<td>What does the literature on nudging in organisations tell us about (a) the persons being nudged, (b) the psychological factors constraining behaviour change, (c) the explored nudging types and mechanisms, and (d) the behavioural outcomes in support of ESG criteria?</td>
</tr>
<tr>
<td>Sub-question Paper 2</td>
<td>How can nudging be applied in ethics and compliance management to encourage ethical behaviour in the workplace?</td>
</tr>
<tr>
<td>Sub-question Paper 3</td>
<td>How should message frames be formulated and applied to promote electric vehicle adoption by employees?</td>
</tr>
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</table>

Paper 1 addresses the first sub-question. The paper provides a systematic literature review of previously studied nudging interventions applied in organisations in areas relevant to CS. It maps and synthesises information from different disciplines on the (a) target persons, (b) barriers to behaviour change, (c) nudging types and mechanisms, and (d) behavioural outcomes across ESG domains into a coherent framework. Thereby, the article sets the scene for the subsequent
theoretical and empirical studies. It identifies research clusters and gaps in the field of interest and derives an agenda for research that this thesis seeks to advance.

Paper 2 answers the second sub-question. This conceptual paper synthesises insights from nudging and behavioural ethics research into a framework to derive implications for ethics and compliance (E&C) management. The article identifies uncertainty, anonymity, and injustice as contextual barriers to ethical decision-making and revisits the long-standing discussion on compliance- and values-oriented ethics management (Paine, 1994; Weaver & Treviño, 1999) concerning these barriers. Subsequently, the paper defines values-oriented conditions under which the identified barriers can be restrained. The article further attributes different nudges to the identified barriers and examines their potential to work against these barriers. The paper ends by providing suggestions for improved implementation of ethics nudging in uncertain, anonymous, and unjust contexts. Overall, it stresses the relevance of using nudges to complement conventional E&C interventions with the overarching aim of fostering an ethical climate.

Finally, Paper 3 answers the third sub-question. It employs empirical evidence from a field experiment to assess the use of message frames as nudges within an automotive company to promote the shift to electric mobility as a core sustainability goal. The nudges, delivered through reminder emails and order system pop-up notifications embedded in the vehicle order system, highlight different motives (emotional, sustainability, cost saving) for adopting electric vehicles (EV). The study reveals significant positive effects of the email interventions, though not of the pop-up notifications. However, the durability of these effects is constrained. Overall, the cost-saving message, which underscores the financial advantages of adopting EVs without altering the actual economic incentive structure, exerts the most enduring and strongest influence on electric car choices. In the scope of this dissertation, the article enhances the conceptual insights from Paper 2 with empirical findings on the use of nudges in practice to encourage employee behaviour in favour of CS.

Following this introduction, Section 2 reviews the literature regarding the theoretical background of this thesis. Subsequently, Section 3 outlines the research approach that guides this PhD project. It considers the research philosophy that informs the overall framing and positioning of the dissertation and presents the different strategies and methods that underlie the three individual articles of my thesis. Section 4 provides a content-related overview of my papers and how they contribute to the overall thesis. Finally, in Section 5, I discuss how my dissertation advances the current theoretical knowledge related to ESB. This section also demonstrates the
practical relevance of my thesis and provides a critical account of its limitations and areas for future research. The kappe ends with a conclusion in Section 6.
2. THEORETICAL BACKGROUND

This section reviews the literature that informs the theoretical background of this thesis. It clarifies the meaning of CS and that of related terms. Further, it explains the relevance of behaviour change for CS and highlights the role of the workplace context in shaping ESB. Finally, it compiles insights on the application of nudging as a context-oriented management practice to encourage ESB.

2.1. Corporate sustainability and related terms

Discussions around CS are commonly informed by the World Commission on Environment and Development (WCED)’s definition of sustainable development in terms of “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987, p. 54). Notably, this definition does not focus explicitly on corporations. Rather, it underscores diverse actors’ general and enduring responsibility towards society (Rasche et al., 2023). Among other groups, business leaders have accepted the definition as a guiding principle to align their activities with wider sustainability imperatives (Linnenluecke & Griffiths, 2010).

Central to this definition is a systems perspective that views a company’s activities in the context of larger systems (Bansal & Song, 2017). Initially, sustainability research focused primarily on ecological systems, concerned with an enterprise’s influence on the natural environment and the technological opportunities arising from eco-innovation processes (Shrivastava & Hart, 1995). However, over time, sustainability scholars’ perspectives have gradually broadened to account for interrelated economic, environmental, and social considerations of corporate activities (Bansal & Song, 2017). Economic concerns relate to conventional corporate objectives for a durable business, such as long-term profitability (Porter, 1985). Environmental considerations involve minimising resource use and reducing the ecological footprint, whereas social considerations comprise staff development and community engagement (Linnenluecke et al., 2009). Overall, CS can be understood as balancing economic, environmental, and social issues when doing business. The aim is to avoid situations, where acting in support of one system comprises another (Rasche et al., 2023).

Next to the term CS, various other concepts have emerged in the academic literature to refer to the integration of economic, environmental, and social concerns of corporate activities (Rasche
et al., 2023). The resulting diversity of widely overlapping definitions often creates confusion about the terminology (Linnenluecke & Griffiths, 2010). Most notably, scholars frequently refer to corporate social responsibility (CSR) to discuss the role of business in society (Matten & Moon, 2008, 2020; Moon, 2014). Historically, CSR research took a normative perspective centred around the moral obligations of companies (Bowen, 1953). Respective studies have mainly drawn on Carroll’s (1979, p. 500) definition of CSR as “the economic, legal, ethical, and discretionary expectations that society has of organisations at a given point in time”.

Initially, CSR research primarily focused on social issues such as labour rights, gender equality, and consumer interests. Environmental concerns were seen as a subset of social matters. Nevertheless, the distinction between CS and CSR blurred as time passed, so that both research streams speak to similar business-society concerns (Bansal & Song, 2017). It is thus important not to separate CS from CSR too strictly since they are increasingly converging in their focal areas. In the present thesis, I mainly use the term CS because it has become the most commonly used terminology in practice (Rasche et al., 2023).

The discussions around CS and CSR are rooted in business ethics (Rasche et al., 2023). The latter concerns socially agreed-upon principles about morally right and wrong conduct in business (Duska, 2000). Hence, business ethics can be defined as “the study of business situations, activities, and decisions where issues of right and wrong are addressed” (Crane et al., 2019, p. 3). Importantly, perceptions of right and wrong are based on moral judgement, which relies on the norms, values, and beliefs embedded in social processes (Crane et al., 2019). Morality can thus go beyond legal rules and regulations that contain many loopholes and grey areas. Business ethics also embraces those areas where norms are unclear or in conflict with one another. It provides an analytical lens for reflecting on the values that should guide business conduct when facing ethical dilemmas (Rasche et al., 2023).

Having outlined CSR and business ethics as two key concepts related to CS, I add another dimension to the discussion by operationalising CS regarding ESG issues. Hence, besides environmental and social concerns beyond the economic considerations of business-as-usual scenarios, I consider governance issues that support and enable a company to act sustainably (Rasche et al., 2023). Regardless of how we structure and organise relevant problem areas, CS can be seen as relying on an ethical rationale that implies moral expectations about desirable business conduct across economic, environmental, and social concerns (Bañon Gomis et al., 2011).
2.2. The relevance of employee sustainable behaviour for corporate sustainability

To tap the full potential of CS, firms must translate strategic sustainability objectives into impactful performance outcomes (Wolf, 2013). This need requires them to move from mere policy formulation to practice implementation (Bromley & Powell, 2012; Wijen, 2014). Even though technology and innovation are important levers to promote the sustainability performance of companies, realising this potential relies largely on human behaviour (Russel & McIntosh, 2011). Implementing successful CS practices ultimately depends on the decisions of groups and individuals in and outside organisations (Lülfs & Hahn, 2014).

As internal members of organisations, employees are particularly important agents of CS since they contribute to an organisation’s sustainability performance through their workplace actions (Dumont et al., 2017). Moreover, their unique experience and insider knowledge about firms may enable them to define and adopt the most relevant sustainability practices for their organisations (Wolf, 2013). Thereby, ESB may be either performed in-role, as a task-related component of employees’ formal obligations (Bissing-Olson et al., 2013), or extra-role, outside employees’ official duties in terms of organisational citizenship behaviour (OCB) (Boiral et al., 2015). Suggested dimensions of OCB encompass qualities such as altruism, organisational loyalty, and civic responsibility, which can be directed either at other individuals (interpersonal OCB) or at the organisation itself (organisational OCB) (Ones & Dilchert, 2012).

Empirical evidence supports the relevance of ESB for enhanced CS outcomes. For example, Del Brío et al. (2007) found that employee motivation and participation positively affect the achievement of firms’ sustainability objectives regarding environmental action. Similarly, Paillé et al. (2014) and Boiral et al. (2015) discovered a positive relationship between green employee behaviour and the environmental performance of corporations. Moreover, Vlachos et al. (2014) identified improved corporate performance outcomes based on employees’ extra-role socially responsible behaviour. Thus, even though CS research has long treated organisations as a ‘black box’ (Howard-Grenville, 2006), widely neglecting intrafirm processes on the level of individual employees (Aguinis & Glavas, 2012), a rising stream of studies specifically focus on the role of organisational members about CS (Bhattacharya et al., 2022; Lülfs & Hahn, 2014; Pellegrini et al., 2018; Stahl et al., 2020).

Following the distinct but related research traditions of CSR, CS, and business ethics on the macro level (Rasche et al., 2023), different streams of research have evolved on the micro level
to study the role of employees in sustainable business. These streams primarily focus on social, environmental, and ethical workplace issues, respectively.

Studies on social workplace issues are mostly in the micro-CSR field (Rupp & Mallory, 2015). The latter involves a psychological and a sociological tradition, which centre on “intra-individual psychological mechanisms” and “individuals as actors engaged in social relationships”, respectively (Gond & Moser, 2021, p. 10). Given the focus of the present dissertation on individual decision-making, this thesis subscribes to the psychological tradition of micro-CSR. Respective studies mainly examine how employees of companies involved in CSR experience positive attitudes, such as job satisfaction, organisational identification, and commitment to work (Brammer et al., 2007; Bastini et al., 2023; Gond et al., 2017). However, there is a lack of studies that establish a clear link between these attitudinal responses and employee behaviour in support of sustainability. Given this specific focus on individual attitudes, the psychological tradition of micro-CSR has been defined as “the study of how CSR affects individuals” (Rupp & Mallory, 2015, p. 211). Even though this definition is not limited to employees (Rupp & Mallory, 2015), thus far, the bulk of investigations centre on employees themselves, referred to as self-related CSR, rather than examining the effects of CSR on other stakeholders, denoted as others-related CSR (Hericher et al., 2023).

Conversely, studies focusing on environmental workplace concerns can be attributed to the research domain of employee green behaviour. The latter refers to “scalable actions and behaviour that employees engage in that are linked with and contribute to or detract from environmental sustainability” (Ones & Dilchert 2012, p. 87). Thus, whereas micro-CSR studies centre on the impact of CSR on individuals, employee green behaviour research specifically focuses on employees and shifts attention to how they influence the environmental sustainability of companies (Zacher et al., 2023). Employees are seen as enactors of green behaviour, emphasising outcomes within their sphere of influence (Ones & Dilchert, 2012).

Finally, research in behavioural ethics studies individual behaviour in organisations that is “subject to or judged according to generally accepted moral norms” (Treviño et al., 2006, p. 952). It examines why people make ethical and unethical decisions (Tenbrunsel & Smith-Crowe, 2008). Therefore, behavioural ethics provides the moral foundation of ESB (Bhattacharya et al., 2022). It explains what causes employees to act in favour or against a shared moral understanding to benefit society (Bazerman & Gino, 2012).

Overall, these research streams inform the microfoundations of CS from different perspectives, each with unique strengths and limitations. Table 2 provides an overview of each
research stream. Whereas micro-CSR concentrates on attitudes rather than behaviour (Gond et al., 2017), employee green behaviour research focuses on behavioural outcomes that, nonetheless, remain confined to environmental concerns (Zacher et al., 2023). Behavioural ethics research, in turn, studies individual behaviour more broadly but rarely explains the relationship between ethical decision-making and sustainable business conduct (Rupp et al., 2015). With my dissertation, I respond to a call for adopting a pluralist perspective when studying the microfoundations of CS (Cooper et al., 2017). I jointly refer to the research streams of micro-CSR, employee green behaviour, and behavioural ethics as micro-level CS scholarship. I centre my inquiry on ESB as the unifying concept (Bhattacharya et al., 2022; Pellegrini et al., 2018). ESB comprises various forms of workplace actions across ESG issues, thus informing CS practices more completely.

Table 2: Micro-level CS research streams

<table>
<thead>
<tr>
<th>Research stream</th>
<th>Definition</th>
<th>Focal issues</th>
<th>Focal outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro-CSR</td>
<td>“The study of how CSR affects individuals” (Rupp &amp; Mallory, 2015, p. 211)</td>
<td>Social</td>
<td>Attitudes</td>
</tr>
<tr>
<td>Employee Green Behaviour</td>
<td>“Scalable actions and behaviour that employees engage in that are linked with and contribute to or detract from environmental sustainability” (Ones &amp; Dilchert 2012, p. 87)</td>
<td>Environmental</td>
<td>Behaviour</td>
</tr>
<tr>
<td>Behavioural ethics</td>
<td>Individual behaviour in organisations that is “subject to or judged according to generally accepted moral norms”. (Treviño et al., 2006, p. 952)</td>
<td>Ethical</td>
<td>Behaviour</td>
</tr>
</tbody>
</table>

2.3. Individual factors influencing employee sustainable behaviour

In studying ESB (and its subcategories), organisational scholars have mainly focused on individual factors. They have drawn on prominent theoretical frameworks from social and environmental psychology (Lamm et al., 2015; Lülfis & Hahn, 2014; Norton et al., 2015; Roy et al., 2023). The most established theory used to examine ESB is the theory of planned behaviour
(TPB), which describes individual actions as a function of personal intentions influenced by people's attitudes, subjective norms, and perceived behavioural control (Ajzen, 1991, p. 179). These factors involve “the beliefs people hold regarding the expected consequences of their behaviour, the normative expectations from others, and the determinants that may facilitate or impede behavioural performance” (Ajzen, 2020, p. 321).

Next to the TPB, another common framework that ESB research relies on is the norm activation model (NAM), which conceptualises personal norms as the main determinants of individual behaviour (Schwartz, 1977). Personal norms refer to a moral obligation, resulting from people’s awareness of the outcomes of performing or not performing a specific action (Schwartz, 1977). Further, expanding norm activation theory, the value-belief-norm theory (VBNT) suggests that individual behaviour is a function of people's norms and underlying beliefs influenced by personal values (Stern, 2000).

Regardless of their variations, these theories all have in common that they exclusively account for cognitive factors shaping ESB (Zacher et al., 2023). At the most basic level, these factors influence behaviour through salient information, or beliefs, that people may attend to before decision-making (Ajzen, 1991). Guidelines and training are seen as critical workplace practices in the literature on sustainable human resource management to strengthen the salience of desirable beliefs (Dumont et al., 2017; Rupp & Mallory, 2015). They may heighten staff awareness and expertise around sustainability issues and strengthen employees’ intentions to support CS objectives (Renwick et al., 2013; Stahl et al., 2020). However, the effects of these initiatives on behavioural outcomes remain unclear. In prior empirical studies, ESB has not increased due to training and other awareness-raising interventions (Kaptein & Schwartz, 2008; Pellegrini et al., 2018).

The limited success of such interventions may relate to the incompleteness of the underlying theoretical models that frequently inform management practices in the workplace. Next to cognitive determinants, ESB is a function of non-cognitive individual factors, most notably habits and emotions (Sabbir & Taufique, 2022). These are widely ignored by micro-level CS research (Gond et al., 2017; Sabbir & Taufique, 2022; Wade & Griffiths, 2022). Habits are developed by repeatedly performing tasks in frequently occurring situations and expressing themselves as intuitive reactions to commonly faced problems (Verplanken & Aarts, 1999). Emotions involve affective processes that signal the importance of an issue (Bissing-Olson et al., 2013; Russell et al., 2017), raising internal motivation to address respective concerns (Carmeli et al., 2017).
Both habits and emotions relate to types of decision-making that Kahneman (2012) terms as System 1. They manifest themselves as automatic and quick reactions and concern most of our day-to-day decisions. Kahneman (2012) compares System 1 to System 2 processes, which are described to involve deliberation based on cognitive determinants, activated for choices that are deemed particularly important. In practice, however, it is hard to distinguish between these two thought processes since decisions often rely on a mixture of System 1 and System 2 features (Melnikoff & Bargh, 2018). For example, employee judgements of sustainability-related issues may involve affective and deliberative components (Vlachos et al., 2014).

Nevertheless, the degree to which these elements come into play depends on the context in which decision-makers find themselves (Steg & Vlek, 2009). When certain cognitive and/or non-cognitive determinants in support of CS are not part of the adopted mode of judgement, they may not influence behaviour. Hence, depending on the context, people may not act on CS objectives (Lülfs & Hahn, 2014; Norton et al., 2017). It is, therefore, critical to account for the role of the social and physical workplace environment in shaping cognitive and non-cognitive aspects of decision-making when studying methods to encourage ESB (Bhattacharya et al., 2022).

2.4. Contextual factors influencing employee sustainable behaviour

Contextual determinants of ESB are factors in the work environment that are external to employees. They influence behaviour by stimulating specific individual cognitive and/or non-cognitive determinants (Zacher et al., 2023). Consequently, targeted alterations in these contextual conditions may increase people’s opportunities to act sustainably or make sustainable behaviour more attractive. These changes can influence people’s perceptions and motivations regarding sustainability (Steg & Vlek, 2009).

The significance that different sub-streams of research related to ESB have previously attributed to the role of the workplace context varies. Especially the literature on employee green behaviour has nearly neglected situational influences on pro-environmental workplace behaviour for a long time (Lülfs & Hahn, 2014). Only recently, Norton et al. (2015) developed a person-situation-interaction model that accounts for the role of contextual factors in shaping employee green behaviour. A similar trend can be observed in the micro-CSR literature, where multi-level models have been adopted within the last decade to understand how organisational determinants impact employees (Carmeli et al., 2017; Rupp & Mallory, 2015).
The behavioural ethics literature holds the longest tradition in micro-level CS research in exploring the contextual origins of ESB (Lülfs & Hahn, 2014). In her seminal conceptual article, Linda Treviño (1986) integrated individual with situational characteristics to describe ethical decision-making in organisations. Thereby, she focused on two main situational factors. On the one hand, she classified the immediate job context as a determinant of ethical behaviour, including physical or psychological features facilitating desirable choices (Treviño, 1986). For example, technological equipment (e.g., energy monitoring systems), workplace infrastructure (e.g., recycling bins), or decision-making aids (e.g., checklists) that are integrated into the job context can support ESB (Zacher et al., 2023).

On the other hand, Treviño (1986) identified the organisational culture as a critical determinant of ethical behaviour. The concept of ‘organisational culture’ closely relates to the one of ‘organisational climate’ (Treviño et al., 1998), which both concern the “internal social psychological environment of organisations and the relationship of that environment to individual meaning and organisational adaptation” (Denison, 1996, p. 625). Thus, whereas these concepts have evolved from different theoretical perspectives with distinct methodological priorities¹, they involve the same substance in terms of the social workplace context. Due to their content-related similarity, I do not distinguish between these two terms within the scope of the present dissertation. For consistency, I will mainly use the term ‘organisational climate.’

Based on Victor and Cullen’s (1987) ethical climate framework, Martin & Cullen (2006) define ethical climates as shared perceptions between members of an organisation as to “what constitutes right behaviour”, which “arise when members believe that certain forms of ethical reasoning or behaviour are expected standards or norms for decision-making within the firm.” (p. 177). Centring on the social context of organisations, research on ethical climates in organisations frequently draws on theories that explain individual behaviour as a function of social factors of influence (Newman et al., 2017). For instance, studies often refer to social learning theory (Bandura, 1971) to explain the role of leadership as a determinant of an ethical climate. Leaders can influence the behaviour of employees by role modelling exemplary conduct (Demirtas & Akdogan, 2015; Shin, 2012). Other ethical climate studies (e.g., Carmeli et al., 2017) draw on social identity theory, which suggests that in-group identification and norms predict individual

¹ Historically, organisational research on culture involved qualitative methods and focused mainly on the evolution of social systems over time (Schein, 1990). In turn, organisational research on climate involved quantitative methods and focused on the impact of social systems on members in organisations (Denison, 1996).
behaviour (Tajfel & Turner, 1985). Moreover, social exchange theory (Homans, 1958) is often used to explain the relationship between perceived organisational support as a determinant of an ethical climate and ethical behaviour that evolves as reciprocal reaction (Newman et al., 2017).

In further defining ethical climates, this dissertation subscribes to Tenbrunsel et al.'s (2003) model that distinguishes between formal and informal systems embedded in organisational climates. Formal systems are documented and standardised, comprising the policies, procedures, initiatives, and interventions organisations deliberately implement to encourage desirable employee conduct. Due to their documentation, independent observers can verify them (Tenbrunsel et al., 2003). In turn, informal systems convey indirect signals regarding appropriate conduct through personal relationships. They are felt rather than seen and cannot be verified through formal documents (Tenbrunsel et al., 2003, p. 288). Examples are social norms that characterise team interactions and leadership and supervisor support (Zacher et al., 2023). Formal and informal systems are aligned in an ethical climate to send consistent signals about morality (Tenbrunsel et al., 2003; Treviño, 1990). This signal can raise the moral awareness of employees at critical decision points and thereby encourage their ethical behaviour (Tenbrunsel & Smith-Crowe, 2008).

In order to substantively promote employee behaviour in support of CS, fundamental transformations of organisational climates are necessary (Linnenluecke & Griffiths, 2010; Norton et al., 2015) to reflect shared ethical values for the benefit of society (Crane, 2000). Workplace initiatives aimed at promoting an ethical climate must go beyond the expansion of formal systems towards strengthening informal systems (Goebel & Weißenberger, 2017). Implementing formal interventions such as codes of conduct, training, and sanctioning that target cognitive individual determinants independent from actual decision situations does not suffice to encourage ESB (Bhattacharya et al., 2022). Emphasis must, therefore, lie on various measures that can influence both cognitive and non-cognitive determinants of ESB, including changes in the physical and social context of workplace situations. This ambition remains an ongoing challenge for many organisations (Goebel & Weißenberger, 2017), and we lack scientific studies that explore context-oriented management practices designed to encourage ESB (Norton et al., 2015).
2.5. Nudging as a context-oriented management practice to encourage employee sustainable behaviour

This dissertation addresses the void of context-oriented intervention studies in the CS literature by examining the use of nudges to enhance ESB. Nudges can address both cognitive and non-cognitive determinants of ESB based on small adjustments in decision situations. There is rising attention from organisational scholars towards using nudges as management practices (Beshears & Gino, 2015), including for sustainability-related issues (Venema & Van Gestel, 2021). Most recently, they have been suggested to sensitise employees to sustainability (Bhattacharya et al., 2022).

However, despite a growing evidence base, applying nudges in the workplace requires further investigation (Chapman et al., 2020), particularly because the determinants of behaviour within organisations partly differ from those of consumers and citizens (Zacher et al., 2023). According to Thaler and Sunstein (2008, p. 5), a primary goal of nudging is to “make choosers better off, as judged by themselves”. This principle implies that nudges should serve the self-interested goals of their recipients. Yet, in the context of workplace sustainability, the pursued goals of nudging might not necessarily align with the self-serving objectives of individual employees. For example, concerning environmental sustainability, private households often have a cost-saving motive to act pro-environmentally by conserving resources, which nudges can support. Conversely, in organisations, employees typically do not bear the financial consequences of their actions (Klege et al., 2022; Russell et al., 2016). Instead, other factors, such as social norms, are especially relevant in the workplace (Zacher et al., 2023). Close interactions in workgroups and teams make employees receptive to the practices exposed by co-workers and leaders (Goldstein & Cialdini, 2011).

Considering the unique dynamics of organisations, it is crucial to acknowledge that nudges proven successful in consumer research may not directly translate to workplace settings. To design interventions that can adequately target both the conscious and unconscious aspects of employee decision-making (Norton, 2015), it is essential to delve deeper into the situational factors that specifically apply to organisations. I contribute insights on these distinctive organisational factors with the current PhD project. Moreover, by focusing on ESB, I enhance the understanding on the mechanisms that nudges can elicit to encourage behaviour change in support of CS.

Thus far, nudging research has mainly focused on addressing the practical challenges of designing and implementing nudging interventions. This focus has led to the replication of
identical interventions, irrespective of the targeted problem. However, the limited success achieved by this approach (Hauser et al., 2018) indicates that the notion of a “silver bullet” set of nudges is highly unlikely. Regrettably, few studies have provided decision rules to guide the choice of appropriate nudges for different situations (Hauser et al., 2018). Notably, this knowledge gap is pronounced in workplace environments due to the emerging nature of the research field (Chapman et al., 2020). The aim of my thesis is thus to investigate the underlying conditions that can enhance the effectiveness of nudging interventions utilising similar mechanisms within a variety of workplace contexts. Given the lack of theoretical underpinnings for understanding these conditions, the current dissertation draws upon theories from organisational behaviour (OB) and micro-level CS research to construct a comprehensive framework. Hence, whereas my PhD project emphasises the context-specific success of nudging interventions, it also seeks to comprehend more generally the conditions that can enhance the effectiveness of nudges across a range of comparable situations.

When studying how nudges can influence decision-making, it is important to note that they work by involving alterations in the immediate job context (Thaler & Sunstein, 2021). These alterations can trigger cognitive and non-cognitive aspects of judgment. Hence, they may engage both System 1 and System 2 processes (Beshears & Gino, 2015). While recent behavioural science research rejects a strict dichotomy between System 1 and System 2 (Melnikoff & Bargh, 2018), one should acknowledge that different nudges involve varying degrees of automatic and deliberative aspects of decision-making. This point is particularly pertinent since certain nudges do not directly encourage active cognitive reflection, which has led to criticism regarding the transparency and potential autonomy constraints associated with nudging as a management practice (Friedland et al., 2023; Rozeboom, 2023). Concerns about the transparency of nudges pertain to the potential risk that the recipients of these interventions may not always recognise that they are being nudged (Bovens, 2009; Rozeboom, 2023; Ruehle, 2023). Relatedly, objections about threats to the choosers’ autonomy arise from considerations that nudges may compromise an individual's capacity to independently make their own choices, thus representing a form of manipulation (Bovens, 2009; Ruehle, 2023).

This criticism calls for a more nuanced perspective, though. First, one should distinguish between “autonomy as freedom of choice” and “autonomy as rational agency” (Mukerji & Mannino, 2023). Nudges do not infringe on autonomy according to the first interpretation since they do not restrict choices. Nevertheless, they might limit autonomy according to the second meaning when their influence on choices is not transparent, thereby constraining an individual’s
opportunity to make a reasonable judgement independently (Bovens, 2009; Rozeboom, 2023; Ruehle, 2023). Nevertheless, this critique is valid only if we assume that reasoning is limited to conscious thought. As Levy (2019, p. 8) puts it, “nudges are addressed to reasoning mechanisms”, which can be both deliberative and intuitive. These reasoning mechanisms are influenced by various contextual cues, often causing undesirable outcomes. Nudges can serve to counteract such adverse cues with sound decision recommendations (Levy, 2019).

Considering the above, nudges can be seen as implicit or explicit recommendations to enhance people’s agency (Mukerji & Mannino, 2023). This agency-enhancing function is especially apparent for nudges that involve an element of reflection, thereby explicitly targeting cognitive (System 2) aspects of reasoning (Beshears & Gino, 2015). Reminders and pledges, for example, are among the types of nudges that explicitly engage System 2 (Beshears & Kosowsky, 2020). Reminders prompt people about the opportunity to take specific actions (Sunstein, 2014). Pledges encourage individuals to commit to desirable behaviour prior to an upcoming decision (Sunstein, 2014). Both these nudges can convey cues about favourable actions at critical decision points. For instance, in energy conservation in the workplace, reminders to turn off electronic equipment before leaving offices have been tested (Russell et al., 2016).

Another relevant nudging strategy that involves System 2 is to provide selected information in a decision situation, prompting people to approach a problem from a different perspective (Beshears & Kosowsky, 2020). Respective nudges can raise awareness for certain issues and increase people’s desire to act in alignment with these issues (Beshears & Gino, 2015). Regarding CS, nudges in the form of pro-environmental messages sent by executives were tested to encourage ESB (Russell et al., 2016). They influenced employees’ perceptions of the degree to which sustainability was a priority for the organisation, which affected individual behaviour accordingly (Russell et al., 2016).

Similarly, social norm nudges can engage System 2 by highlighting what most people do or think one should do (Sunstein, 2014). They raise the salience of people’s beliefs about the prevalence of certain choices or societal normative expectations, which can motivate individuals to reflect on and act in alignment with these beliefs (Cialdini et al., 1991). In the workplace, for instance, social norm nudges have been tested as a means to emphasise energy conservation by employees. This norm encouraged others to follow suit and adopt similar sustainability practices (Charlier et al., 2021).

By enhancing reflection, the above examples of nudges can empower employees to act on what they consider right in a particular situation. Such educative nudging strategies (Sunstein &
Reisch, 2019) are closely related to a more recently proposed type of intervention known as “boosts” (Hertwig & Grüne-Yanoff, 2017). Equally building on behavioural sciences, boosts are non-monetary and non-coercive interventions that enhance people’s competence to make good decisions for themselves (Hertwig & Grüne-Yanoff, 2017). Whereas critical perspectives tend to contrast boosts with nudges, depicting boosts as agency-enhancing and nudges as agency-constraining measures (Bastini et al., 2023; Friedland et al., 2023), in practice, the line between nudges and boosts is more subtle. Indeed, Hertwig & Grüne-Yanoff (2017) acknowledge that educative nudges and boosts widely overlap. Both address behavioural problems by targeting people’s motivation and cognitive skills (Hertwig & Grüne-Yanoff, 2017).

In contrast, larger discrepancies may arise between boosts and nudges that do not directly enhance cognitive reflection; instead, the latter function as implicit recommendations (Bastini et al., 2023). The most prominent example of nudges in this category is probably the one of defaults. The latter refers to changes in the choice architecture so that people are automatically enlisted into desirable choice options (Sunstein & Reisch, 2013; Sunstein, 2014). In the workplace, defaults have been previously tested to encourage enrolment in retirement saving programmes that employees were otherwise reluctant to take up (Choi et al., 2017). By automatising behaviour change, defaults can address the inclination of System 1 to favour choices that require minimal cognitive effort (Beshears & Kosowsky, 2020). Beyond this non-cognitive function, default options may also shape beliefs and motivations, as they might be viewed as suggested (injunctive norm) or predominantly selected (descriptive norm) choices (Everett et al., 2015).

Like defaults, nudges that increase the ease and convenience of desirable choices may be suited to address non-cognitive aspects of decision-making, such as habits and routines (Sunstein, 2014), which have been identified as critical determinants of ESB (Lülf & Hahn, 2014). They can disrupt the situational factors that cue people into their established behavioural patterns and facilitate the creation of more favourable practices (Beshears & Kosowsky, 2020). For instance, regarding ESB, the installation of eye-catching recycling bins in offices has successfully facilitated employees' appropriate waste management habits (Holland et al., 2006). Similarly, nudges that simplify decision-making make desirable options easy to select by changing the immediate job context (Sunstein, 2014).

Moreover, choices that are easy to make are often the most enjoyable for people (Sunstein, 2014). Hence, nudges facilitating decisions may arouse positive emotions, strengthening System 1 reactions (Beshears & Kosowsky, 2020). Emotions have been identified as significant drivers of ESB (Bissing-Olson et al., 2013; Carmeli et al., 2017). Yet, our understanding of how affective
processes influence behavioural patterns in favour of CS remains insufficient (Gond et al., 2017; Sabbir & Taufique, 2022). Nudging interventions specifically designed to arouse emotions (Beshears & Kosowsky, 2020) may provide critical insights into the underlying affective mechanisms that can enhance ESB.

Given the relevance of intuitive decision mechanisms in ESB (Sabbir & Taufique, 2022) and the potential of nudging to address these, I believe it would be unwise to discard such interventions in response to critical perspectives on nudging. However, to make nudges addressing intuition more transparent, it is worth considering recent suggestions under a framework known as ‘Nudge Plus’ (Banerjee & John, 2021). Nudge Plus acknowledges that System 1 and System 2 processes operate interactively and should be addressed in combination. Respective solutions complement cues that promote intuition with active triggers of reflection. Examples include providing information about the goals of nudging interventions before implementation, thus helping individuals thoroughly consider the intervention implications (Banerjee & John, 2021).

This approach aligns with the demands outlined by critical arguments regarding the autonomy requirements of nudging in the workplace (Rozeboom, 2023; Ruehle, 2023). Organisations may indeed possess valid reasons for influencing employees, especially in the context of managerial authority in employment relationships (Ebert & Freibichler, 2017). Consequently, nudges may figure among standard managerial practices aimed at guiding the behaviour of employees in alignment with corporate objectives. Many respective areas of influence, such as setting double-sided printing as default, are uncontroversial (Ruehle, 2023). In addition, nudges as choice-preserving initiatives are considerably less intrusive than mandates or sanctions (Mukerji & Mannino, 2023). However, to ensure accountability, employees should be sufficiently informed about the nudging endeavours of their employers (Ruehle, 2023).

Based on the revisited literature, my PhD project aims to increase the understanding of the underlying cognitive and non-cognitive mechanisms of judgement that different nudges can address to encourage employee behaviour supporting CS. Even though we know that nudges can shape behaviour through various channels, the range of these possibilities remains insufficiently explored (Hauser et al., 2018). I am especially interested in the complementarity of nudging interventions addressing System 1 and System 2 processes. Assuming that cognitive and non-cognitive elements of reasoning interact, I explore the role of nudges as gentle guides to employee behaviour change. Thereby, I seek to investigate how they can encourage employee decision-making in alignment with CS objectives.
Given the relevance of the organisational climate in shaping ESB (Linnenluecke & Griffiths, 2010; Norton et al., 2015), it is important to consider the potential role of nudging in relation to organisational climates. Even though nudges typically target specific behavioural incidents, they may influence perceptions and beliefs that collectively define an organisational climate. Nudges engaging System 2 may increase conscious perceptions about the relevance of shared values in organisations, which in turn can impact ESB (Russell et al., 2016). Moreover, it is worth exploring how nudges involving System 1 can influence the organisational climate indirectly. Even though such interventions that target habits and emotions do not address conscious perceptions and beliefs directly, they may raise a shared understanding of sustainability-oriented values in the long term. When rapid and intuitive behaviour is repeatedly performed, it can translate into desirable norms (Sabbir & Taufique, 2022), shaping the organisational climate over time (Renwick et al., 2013). Thus, nudges may impact the organisational climate beyond modifying the immediate job context, potentially mediating ESB (Russell et al., 2016). It is important to note that this relationship remains understudied in the nudging literature and is based on assumptions rather than evidence.

Overall, this thesis aims to integrate and generalise the insights from the increasing body of research on nudging interventions relevant to ESB. This knowledge is currently dispersed across disciplines. Moreover, the thesis aims to expand existing studies by providing empirical evidence on nudging mechanisms that have received limited attention in previous studies. Figure 1 depicts the conceptual framework that guides the overall structure of this dissertation.
Figure 1: Conceptual framework of the dissertation
3. RESEARCH PHILOSOPHY AND METHODOLOGY

This section considers the research philosophy that informs this dissertation's overall framing and positioning. It starts with an account of positivism typically associated with nudging research. Subsequently, it introduces the philosophy of critical realism and explains why this dissertation rather aligns with a critical realist perspective. This section also presents the different strategies and methods used in the three individual papers that form the core of this thesis.

3.1. Research philosophy

As an evidence-based approach that encourages the use of experiments to determine intervention effectiveness (Haynes et al., 2012), nudging is typically associated with the philosophical tradition of positivism (Einfeld & Blomkamp, 2022). Nudge advocates prioritise quantitative over qualitative data to determine causal relationships through experimental testing (Haynes et al., 2012). Inspired by natural sciences, they focus on developing theoretical hypotheses about the relationship between specific variables that can be statistically tested (Einfeld & Blomkamp, 2022). This deductive research approach resonates with the positivist epistemology of value-free knowledge production based on observable and measurable facts (Saunders, 2016). Positivists seek causal relationships in their data to formulate law-like generalisations about an observable social reality (Gill & Johnson, 2010).

This positivist standpoint about reality being observable is also reflected by the idea of nudging in terms of “altering people’s behaviour in a predictable way” (Thaler & Sunstein, 2008, p. 6). Thaler and Sunstein’s (2008) foundational work builds on the insights by Amos Tversky and Daniel Kahneman about heuristics and biases that can systematically undermine human decision-making (Kahneman & Tversky, 1979; Tversky & Kahneman, 1974, 1981). Since heuristics and biases are seen as systematic (Tversky & Kahneman, 1981), epistemologically, this view implies that “we can scientifically operate with them and predict their occurrence” (Hortal, 2023, p. 343). Recognising this systematicity, Thaler and Sunstein (2008, p. 6) suggest nudging as a solution to address heuristics and biases by making small changes in the environment in which predictable decision errors can take place. Experiments are the gold standard to verify the effectiveness of proposed nudging interventions (Haynes et al., 2012).

However, the analysis of interventions based on experimental testing has been criticised for generating insights that are hardly transferrable to other contexts, particularly when experiments
are conducted in laboratories (Hortal, 2023; Staw, 2010). In organisations, behaviour is shaped by a complexity of contextual factors, some of which, like interpersonal relationships or the norms conveyed by leadership, are hard to capture in the lab (Brief & Smith-Crowe, 2015; Hauser et al., 2017). Hence, the possibility of making generalisable predictions about the effectiveness of nudging interventions tested in the laboratory may be constrained in workplace situations. Acknowledging these limitations, scholars increasingly call for research regarding nudges that first try to understand people’s underlying (conscious or unconscious) beliefs in a specific context and the psychological mechanisms that can then drive behaviour change (Hauser et al., 2018; Hortal, 2023).

The present dissertation shares the view about the relevance of the situational context in shaping the beliefs and behaviour of people. It is guided by the assumption that due to the context specificity of workplace situations, making universally applicable predictions, as common in natural sciences, can be challenging (Hortal, 2023). Contrary to the positivist standpoint, I do not think that all aspects of the situational context in organisations are objectively observable and measurable. However, the combination of theory and data can help us gain an informed understanding of relevant contextual conditions. With this understanding, we can formulate decision guidelines for applying nudging interventions appropriately in different contexts. For example, Paper 2 synthesises empirical insights from prior nudging studies with theoretical knowledge from behavioural ethics research to derive a typology of nudges suited to comparable situations.

Overall, the perspective on the relevance of theory aligns with the research philosophy of critical realism (Saunders., 2016). Critical realists distinguish between an objective ontology, suggesting that reality exists independent of our cognition, and a subjective epistemology, meaning that our understanding of reality is limited (Bechara & Van den Ven, 2007). The core ontological assumption of critical realism is that reality is stratified and comprises three layers: the ‘empirical’, the ‘actual’, and the ‘real’ (Danermark et al., 2005; Fleetwood, 2005; Saunders, 2016). Only the ‘empirical’ can be experienced and observed. It constitutes a minor element of the total ‘actual’ events happening at any given moment. Finally, the ‘real’ encompasses the underlying structures and mechanisms that shape events at the surface (Reed, 2005). Critical realists focus on explaining the ‘empirical’ through the structures that influence observable events (Saunders, 2016). Thus, the emphasis lies on understanding and explaining causal mechanisms rather than predicting outcomes (Reed, 2005).
By adopting a critical realist perspective, the current dissertation seeks to illuminate specific aspects of the organisational context that can shape decision-making for more sustainable business conduct. Through the integration of theory and data, the main ambition is to understand how the organisational context interacts with individual determinants of ESB and how nudges can influence contextual conditions to encourage desirable behaviour change in workplace situations. For instance, Paper 3 relates the empirical insights gained in a field experiment to knowledge from micro-level CS research to explore different individual mechanisms that nudges can trigger through small alterations in decision situations. The embraced assumption about the interplay between the organisational context and individual factors that shape behaviour resonates with the critical realist stance about the “existence of independent structures that influence the actions of actors in a particular setting while acknowledging the role of the subjective knowledge and reasoning of these actors” (Mukumbang, 2023, p. 94).

Moreover, inherent to critical realist thinking is the understanding that the underlying causal mechanisms of focal events are not directly accessible to researchers (Saunders, 2016). Rather, scholars can only see some manifestations of the ‘real’ through empirical data. To draw generalisable conclusions about causal relationships, the role of theory is therefore decisive (Danermark, 2005; Reed, 2005). The current dissertation supports the view about the relevance of theoretical insights for contextualising evidence. Experiments are critical to empirically test the causal effects of nudges in situations of interest. However, they can only capture measurable factors of reality. We need to rely on theory to establish the wider relevance of the results we gained (Hauser et al., 2017). This thesis seeks to integrate prior theoretical knowledge from OB and CS research with the evidence gained from workplace nudging studies. Thereby, it aims to provide an informed discussion about the potential consequences of identified nudging mechanisms that can be relevant to different workplace situations.

Notably, because of the assumption that reality is not fully accessible to researchers, critical realists acknowledge that theories are human constructions (Fleetwood, 2005; Reed, 2005). This standpoint reflects the subjective epistemology of the paradigm (Mukumbang, 2023). Our personal, historical, and cultural origins shape the interpretation and subsequent generalisation of empirical findings (Mukumbang, 2023). Thus, our knowledge of reality cannot be understood independently of our backgrounds (Saunders, 2016). Critical realist scholars should recognise that our individual perceptions influence our work and try to minimise bias by ensuring a transparent and systematic research process (Mukumbang, 2023; Saunders, 2016). To reduce biases, the
current thesis follows rigorous methodological standards proposed by behavioural scientists for rendering the analysis of nudges as objective as possible (Ball & Head, 2021).

3.2. Research strategies and methods

Having outlined how the philosophy of critical realism guides the overall research approach taken by this dissertation, I will now zoom in to explain the research strategies and methods employed in the studies that underpin my thesis. Notably, only one of my three papers, namely the final one, relies on primary research as a field experiment involving quantitative methods. The other two papers report secondary research. My first paper is a systematic evidence map that presents and synthesises knowledge from prior workplace nudging studies. The second paper provides a conceptual evaluation synthesising insights from behavioural ethics and nudging research.

It is thus hard to chart the overall design of my dissertation in terms of the commonly used categories of qualitative, quantitative, or mixed-methods research (Saunders, 2016). Nevertheless, without categorising methods in quantitative and qualitative terms, my papers complement each other with different approaches and contributions towards answering the research question. This pluralist design is characteristic of the critical realist tradition (Danermark et al., 2005). Below, I will describe the distinct strategies and methods used for each of the three papers and show how they relate to the critical realist perspective.

3.2.1. Paper 1: Systematic evidence map

Paper 1 lays the foundation of my research project with a systematic evidence map of prior nudging interventions addressing ESG issues in organisations. The systematic approach taken aligns with the critical realist goal of maximising objectivity during data collection (Saunders, 2016). We aimed to decrease the risk of biased and value-laden research, which could result in selective identification, presentation, and/or evaluation of relevant intervention studies (James et al., 2016).

With this critical realist objective in mind, we developed a research protocol that we made publicly available before initiating the review process. This protocol adheres to the Reporting Standards for Systematic Evidence Synthesis. These standards offer reviewing criteria to ensure that relevant study details are reported consistently (Haddaway et al., 2016). By following them,
we sought to increase the transparency and replicability of our search, screening, and coding procedures.

Our literature search encompassed a wide range of data sources to minimise the risk of selective data identification. Initially, we conducted a manual search in selected journals to identify key nudging papers and gain an understanding of the terminology used in these papers. With this knowledge, we formulated a Boolean search string, which we tested and refined before running our search across interdisciplinary databases. Our literature selection adhered to inclusion and exclusion criteria previously defined in the research protocol. Further, acknowledging that our views as critical realist researchers are subjective, we compared a sub-sample of included studies at title, abstract, and full-text levels during the literature screening process to ensure inter-rater reliability.

Finally, to reduce the risk of a biased data presentation and evaluation, we based the mapping of intervention information on a predefined coding scheme. We iteratively adapted the coding scheme during the actual coding process to ensure that the coding categories adequately reflected relevant study details. While embracing a critical realist perspective that recognises the provisional and imperfect nature of knowledge generation (Saunders, 2016), this methodological approach enabled us to pinpoint pertinent knowledge clusters and identify gaps, providing the basis for developing implications for future research.

3.2.2. Paper 2: Conceptual evaluation

Paper 2 is a conceptual paper focusing on ethical behaviour as a key foundation of CS. It synthesises insights from nudging studies and behavioural ethics research into a framework that can inform E&C management. Choosing a conceptual paper aligns with the relevance of theory in the critical realist research tradition (Danermark et al., 2005). Even though conceptual papers differ from theory papers, which expand or build theory themselves (Cropanzano, 2009), they still profoundly engage with theoretical concepts. They aim to “bridge existing theories in interesting ways, link work across disciplines, provide multi-level insights and broaden the scope of our thinking” (Gilson & Goldberg, 2015, p. 128). Conceptual papers employ “scientific knowledge and theory - that is, our ability to understand the world the way it is - to make suggestions about the way the world might be” (Suddaby et al., 2023, p. 292)”. Thus, from a critical realist perspective, they may serve as an intermediary between scientific observations and the wider reality that remains inaccessible to scholars (Saunders, 2016).
With my conceptual paper, I aimed to uphold critical realism’s goal of reducing value-laden knowledge production. It is noteworthy, however, that conceptual papers, being non-empirical, require distinct criteria to guarantee their academic rigour (McGregor, 2018). Acknowledging this need for structured guidance, Suddaby et al. (2023) have defined three key conditions that conceptual papers should fulfil. I continue by assessing the approach employed by my paper against these three criteria.

First, conceptual papers should be phenomenon driven. Their motivation should stem from real-world problems rather than a gap in theory (Suddaby et al., 2023). In this respect, my paper identifies the challenge of effectively managing E&C issues in organisations. Existing E&C practices heavily focus on compliance and preventing misconduct (Jannat et al., 2021). However, while compliance interventions appear crucial for tackling severe ethical violations, they fail to address the myriad of smaller ethical dilemmas occurring in the workplace every day (Feldman, 2019). The ongoing prevalence of daily ethical lapses underscores the necessity for insights into fostering an environment that encourages ethical conduct (Feldman & Kaplan, 2021). With my conceptual paper, I address this need by evaluating the application of nudging as a choice-preserving and context-oriented ethics intervention.

The second quality criterion Suddaby et al. (2023, p. 289) define is ‘pragmatic in intent’. The type of conceptual papers envisioned by Suddaby et al. (2023) should focus on generating knowledge that contributes to management practice and policy rather than theory. Building on insights from existing research, they may help readers unravel complex organisational issues and ignite fresh perspectives on managing these. Jaakola (2020) suggests four approaches to do so: 1) translating existing research into practical applications, 2) synthesising divergent literature into a coherent framework, 3) adapting findings from one academic field or level to another, and 4) differentiating between empirical contexts where certain theories are (not) applicable. Considering these four options, I argue that my paper takes a synthesising and translating function. It synthesises distinct streams of research and translates these insights into practical implications.

Finally, the third quality criterion for conceptual papers is ‘precise in presentation’ (Suddaby et al., 2023, p. 289). Authors should use simple language accessible to a broad audience, including non-academics. To achieve this objective, they must unpack complex constructs and describe the implications of prior theory and empirical evidence (Suddaby et al., 2023). Accordingly, my paper seeks to clearly explain and support the arguments with critical references. Moreover, it underscores the practical relevance of the discussion with real-world examples. The resulting breadth of insights can be a strength as it may expand managerial perspectives. However, the
inherent length of my discussion could also be considered a weakness, contradicting the idea of a crisp and concise knowledge presentation (Suddaby et al., 2023).

3.2.3. Paper 3: Field experiment

Finally, in Paper 3, my co-authors and I rely on a field experiment to empirically evaluate nudges and their mechanisms designed to encourage pro-environmental employee behaviour in an actual organisation. The decision to conduct a field experiment was guided by the critical realist pursuit of comprehending and explaining causal relations while acknowledging the situational context's influence in assessing specific events (Porter et al., 2017).

The defining features of field experiments in organisations are modifications in a randomly chosen subgroup of individuals or teams within their typical workplace surroundings. The results are subsequently compared “to a randomly selected group for which the change was not introduced” (Hauser et al., 2017, p. 186). This random assignment of the treatment group helps address critical realists' concerns about obtaining biased findings due to researchers’ subjective interpretations (Porter et al., 2017). Exposing the treatment and the control group to similar conditions, except for the focal intervention, ensures high internal validity (Saunders, 2016). The approach enables conclusions about causal relationships by isolating the influence of other variables (Hauser et al., 2017). Thus, even though, as critical realists, we have the epistemological understanding that causal mechanisms are unobservable (Danermark, 2005; Reed, 2005), the experimental results permit inferences of underlying causal relationships. This critical realist interpretation of experiments differs from the one of positivists, who think that all aspects of reality are observable and measurable (Porter et al., 2017)

Field experiments respond to another challenge recognised by critical realists, which is capturing context-specific dynamics when conducting research (Saunders, 2016). By testing interventions in actual organisational contexts, one can account for structural conditions and social dynamics unique to the situation of interest (Hauser et al., 2017). We developed our study in collaboration with members from the case organisation, allowing us to immerse ourselves in managerial practice and deeply understand the context in which employees make decisions. This aspect differentiates field experiments from laboratory experiments, as the latter have faced criticism for not being able to encompass contextual specifics (Brief & Smith-Crowe, 2015; Staw, 2010).
Nevertheless, despite these benefits attributed to field experiments, they can be criticised for their limited ability to support generalisation, leading to low external validity because some findings are potentially specific to the studied organisational context (Deaton & Cartwright, 2018). From a critical realist standpoint, I agree with this critique. The evidence from our field experiment only represents a manifestation of reality with constrained scope (Saunders, 2016). However, contrary to laboratory experiments, the findings clearly provide practical value to the focal organisation, in which they can inform managerial practice and be taken to scale.

Moreover, the context of our study involves characteristics that apply to a wider range of organisations. We focused on enhancing ESB in an established automotive company among a population that might not yet share strong pro-environmental beliefs. This condition is pertinent to numerous organisations positioned in traditionally high-emitting sectors that are slowly transitioning to more sustainable modes of operation. Thus, they must encourage employees to make greener choices (Sroufe, 2017). To derive the wider implications of our study, we relied on critical realism’s emphasis on theory. By integrating our experimental results with theoretical insights from micro-level CS research, we developed an informed understanding of the consequences of our findings more generally.
4. SUMMARY OF PAPERS

Three papers provide the main content of this dissertation. In the following, I will summarise the substance of these papers and explain their role within the scope of the overall dissertation. Table 3 provides an overview of the main details of each paper.

Table 3: Summary of the papers in the dissertation

<table>
<thead>
<tr>
<th></th>
<th>Paper 1</th>
<th>Paper 2</th>
<th>Paper 3</th>
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<tbody>
<tr>
<td><strong>Title</strong></td>
<td>Nudging employees for corporate sustainability: A systematic evidence map</td>
<td>Contextual barriers to ethical behaviour in organisations: What role for nudging?</td>
<td>Sustainable behaviour at work: How message framing encourages employees to choose electric vehicles</td>
</tr>
<tr>
<td><strong>Author(s)</strong></td>
<td>Leonie Decrinis, Lucia A. Reisch</td>
<td>Leonie Decrinis</td>
<td>Leonie Decrinis, Wolfgang Freibichler, Micha Kaiser, Cass R. Sunstein, Lucia A. Reisch</td>
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<tr>
<td><strong>Aim</strong></td>
<td>Map and synthesise organisational nudging studies targeting ESG criteria</td>
<td>Synthesise insights from nudging and E&amp;C management research to evaluate how the use of nudging can enhance ethical behaviour in organisations</td>
<td>Test the effects of nudges in the form of three different message frames (emotional, normative and gain) on the vehicle choices of employees</td>
</tr>
<tr>
<td><strong>Research question(s)</strong></td>
<td>What does the literature on nudging in organisations tell us about (a) the persons being nudged (targets), (b) the psychological factors constraining behaviour change (barriers), (c) the explored nudging types and mechanisms (modes), (d) the behavioural outcomes in support of ESG criteria (outcomes)?</td>
<td>How can nudging be applied in E&amp;C management to encourage ethical behaviour in the workplace?</td>
<td>How should message frames be formulated and applied to effectively promote the EV adoption of employees?</td>
</tr>
<tr>
<td><strong>Literature focus</strong></td>
<td>Organisational nudging (Beshears &amp; Gino, 2015; Chapman et al., 2020); micro-level CS literature (Gond et al., 2017; Rupp &amp; Mallory, 2015; Zacher et al. 2023)</td>
<td>Behavioural ethics (Kish-Gephart et al., 2019; Tenbrunsel &amp; Smith-Crowe, 2008; Treviño et al., 2006); E&amp;C management (Kaptein, 2015; Weaver &amp; Treviño, 1999); ethical climates (Newman et al., 2017); ethics nudging (Hertwig &amp; Mazar, 2022)</td>
<td>Micro-level CS literature focusing on employee green behaviour (Norton et al., 2015); message framing (Lindenberg &amp; Steg, 2007); nudging (Thaler &amp; Sunstein, 2008, 2021; Beshears &amp; Kosowsky, 2020)</td>
</tr>
<tr>
<td>Data</td>
<td>51 articles (comprising 70 empirical studies) published from 1996-2021</td>
<td>-</td>
<td>170 employees in a German sports car company observed from 01-03/2022</td>
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<tr>
<td>Method</td>
<td>Systematic evidence map</td>
<td>Conceptual evaluation</td>
<td>Field experiment</td>
</tr>
</tbody>
</table>
| Findings | 1. Knowledge clusters:  
• **Targets:** Regular employees  
• **Barriers:** System 1 barriers (e.g., moral unawareness, habits, inertia)  
• **Modes:** Social norms  
• **Outcomes:** Changes in routines (regarding resource conservation, employee wellbeing, etc.) | 1. Nudges addressing uncertainty by conveying morality cues:  
• Moral reminders  
• Social norms  
• Moral symbols | 1. Message frames work in emails reminding employees about ordering a new car three months before the deadline but not in pop-up notifications in the online car configurator where employees complete their orders. |
| | 2. **Knowledge gaps:**  
• **Targets:** Managers & job applicants  
• **Barriers:** Emotions  
• **Modes:** Affection  
• **Outcomes:** Changes in high-involvement decisions for sustainable products and processes | 2. Nudges addressing anonymity by conveying social identity cues:  
• Watching eye pictures  
• Peer observation  
• Photos of meaningful others  
• Solidarity messages | 2. The durability of the tested message frames is limited. |
| | 3. **Knowledge gaps:**  
• **Targets:** Managers & job applicants  
• **Barriers:** Emotions  
• **Modes:** Affection  
• **Outcomes:** Changes in high-involvement decisions for sustainable products and processes | 3. Nudges addressing injustice by conveying supportability cues:  
• Thank you messages  
• Prompting leaders to recognise employees | 3. Gain framing in the form of cost-saving messages has the strongest and most durable effect. |
| Contributions | 1. Insights on the psychological foundations of decision-making in support of CS | 1. Framework synthesising nudging and E&C management research to inform the use of ethics nudging in organisations | 1. Insights on how cognitive and non-cognitive processes influence pro-environmental workplace actions |
| | 2. Agenda for future research to expand the study of nudging employees in support of CS | 2. Categorisation and evaluation of different ethics nudges based on specific workplace contexts | 2. Insights on the decision-making of employees who may not yet share strong pro-environmental beliefs |
| | 3. Practical guidance on the design of nudges to encourage behaviour change in support of CS | 3. Managerial implications for an improved implementation of ethics nudging in organisations | 3. Insights on the relevance of the context for nudging – identical message frames elicit varied responses based on the time and place of their occurrence |

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4.1. Paper 1: Nudging employees for corporate sustainability: A systematic evidence map

Paper 1, co-authored by Lucia Reisch, positions the dissertation in the wider field of micro-level CS research (Gond et al., 2017; Norton et al., 2015; Rupp & Mallory, 2015). It focuses on workplace nudging as a novel management approach to encourage employee behaviour change in favour of CS.

To gain an overview of the current state of knowledge in this emerging field of research, our paper maps and synthesises workplace nudging studies from different disciplines addressing ESG issues. We review the following core components that respective studies report: (1) targets (who are the persons being nudged?), (2) barriers (what psychological factors constrain behaviour change?), (3) modes (which nudges are applied, and how do they work?), and (4) outcomes (what are the behavioural outcomes in support of ESG criteria?).

Our findings highlight imbalances in prior literature about all four components. In terms of the target persons, most attention has been put on regular employees, whereas more research is needed on how to nudge executive and prospective employees. Regarding the reported barriers, we identify a strong focus on non-cognitive barriers but a lack of research on emotions. Concerning the studied intervention modes, most attention has been directed to the effects of social norms, whereas affective nudging mechanisms remain understudied. Regarding the behavioural outcomes, reviewed studies mainly focus on changes in workplace routines concerning resource conservation and employee wellbeing. Key knowledge gaps relate to high-involvement decisions that enhance the sustainability of corporate products and processes. Lastly, from a theoretical view, the reviewed nudging studies lack integration into the micro-level CS literature. From an empirical view, studies rely on a narrow range of quantitative methods.

To address the identified issues, our paper develops an agenda for future research with four priorities: (1) specifying the relationship between nudging and constructs related to micro-level CS research, (2) expanding the analysis of nudging types and mechanisms, (3) incorporating a larger range of target persons and behavioural outcomes, and (4) considering a greater diversity of research methods.

Overall, the paper contributes to the micro-level CS literature by synthesising insights from different disciplines on applying nudges as tools to encourage behaviour change for CS. This synthesis can inform future research in the field with insights into the psychological micro-foundations of CS. Notably, our article identifies concrete areas that future nudging studies can
address. Practically, the paper offers guidance on the design of nudges for managers facing the challenge of encouraging sustainable behaviour change in their organisations.

In the context of this dissertation, the paper contributes by presenting an overview of existing knowledge that this thesis seeks to advance. The synthesis of prior workplace nudging evidence provides the foundation for the subsequent two papers. One decisive insight gained is that more research is needed that integrates nudging knowledge with the micro-level CS literature. Paper 2 pursues this ambition. Additionally, Paper 1 highlights the relevance of studying affective nudging mechanisms and focusing on high-involvement sustainability decisions. These concerns are addressed in Paper 3.

4.2. Paper 2: Contextual barriers to ethical behaviour in organisations: What role for nudging?

Paper 2 is a single-authored conceptual paper focusing on ethical behaviour in organisations as the foundation of decision-making in support of CS. Ultimately, sustainable business conduct depends on ethical decision-making by organisational members (Bhattacharya et al., 2022). This conduct requires “a solid set of ethical values and an organisational climate that supports doing the right thing” (Treviño & Nelson, 2021, p. 322). Acknowledging the limitations of conventional compliance-oriented means in promoting ethical behaviour (Kaptein, 2015), the paper develops insights into using nudging as a complementary intervention in E&C management that works through small alterations in the decision-making context whilst preserving choice.

The article synthesises empirical evidence and theoretical insights from nudging and behavioural ethics research and translates these findings into managerial implications. The assessment is structured around three contextual factors that constitute critical barriers to ethical behaviour in organisations: (1) uncertainty, stemming from conflicting norms and unclear principles (Schweitzer & Hsee, 2002), (2) anonymity, resulting from perceptions of social distance (Moore & Gino, 2013), and (3) injustice, relating to inequitable social relationships (Ambrose et al., 2002). The paper emphasises the relevance of implementing nudging in awareness-raising and transparent ways to encourage ethical reflection. Moreover, it suggests combining nudges with other ethics interventions to increase their effectiveness and scope, helping foster an ethical climate in which shared values are embedded.
This paper contributes to the behavioural ethics literature with an overarching framework for assessing the application of nudging in E&C management under consideration of contextual barriers frequently present in the workplace. It revisits the discussion on compliance- and values-oriented ethics management (Paine, 1994; Treviño et al., 1999; Weaver & Treviño, 1999) and specifies values-oriented conditions under which the identified contextual barriers can be restrained. It advances this debate by assessing how nudging can contribute towards fulfilling the defined conditions. For ethics managers, the paper provides guidance on the use of nudges to promote the moral awareness and ethical behaviour of employees in different workplace situations.

To the present dissertation, this paper contributes with a conceptual evaluation that connects knowledge on nudging with key insights from behavioural ethics research (Treviño & Nelson, 2021). Beyond examining the use of nudging to influence specific decisions, it considers how nudges could contribute towards cultivating an ethical workplace climate that provides a wider foundation for CS (Linnenluecke & Griffiths, 2010). Paper 3 complements these insights by empirically evaluating nudging interventions designed to emphasise and reinforce desirable aspects of the organisational climate.

4.3. Paper 3: Sustainable behaviour at work: How message framing encourages employees to choose electric vehicles

Paper 3, co-authored by Wolfgang Freibichler, Micha Kaiser, Cass Sunstein, and Lucia Reisch, relies on a field experiment conducted at the German sports car manufacturer Porsche to evaluate three nudges in the form of message frames as means to promote employee adoption of EVs to support Porsche’s sustainability strategy.

By carefully structuring how information is presented in a particular situation, the frames aim to prompt decision-making in favour of EVs via cognitive and non-cognitive mechanisms. The first frame establishes an emotional connection between EVs and Porsche as a brand, targeting affective (non-cognitive) processes. The second frame conveys a normative goal, targeting cognitive factors and encouraging employees to support a sustainable future for Porsche. The third frame focuses on monetary gains, evoking cognitive processes by providing cost-saving information associated with EVs. The frames are conveyed through two communication channels:
emails that serve as reminders for employees to place new car orders and, subsequently, pop-up alerts appearing in the online car configurator where employees finalise their orders.

Our findings indicate that the interventions implemented via emails, unlike those through pop-up notifications, significantly enhance the adoption of electric vehicles, thus revealing the importance of nudging employees early in the decision process of ordering a new car. Yet, the durability of these effects is limited, as the message frames gradually lose their effectiveness the more time employees take to make their orders. Overall, gain framing emphasising monetary savings has the most enduring and powerful impact on selecting electric cars.

Our paper contributes to the micro-level CS literature by providing insights into different mechanisms driving ESB. The knowledge gained is particularly relevant for organisations in traditionally high-emitting sectors, where employees might not yet hold firm beliefs in favour of the environment. In this respect, our findings indicate the benefits of emphasising complementary gain motives that may foster a supportive mindset for sustainability decisions. The second contribution of our paper lies in offering insights into the contextual conditions that influence people’s receptivity to behaviour change. Evaluating the message frames communicated through two communication channels at distinct stages of the decision process, we find that nudging people early works better than nudging them late for high-involvement choices. This insight highlights the potential of nudges to shape sustainability-oriented intentions next to their commonly known function of bridging the gap between intention and behaviour.

To the present dissertation, the paper contributes with empirical evidence on the impact of nudges in an actual organisation. The article expands the theoretical knowledge gained in Paper 2 with experimental data on the opportunities and challenges of nudging employees for sustainable behaviour change in the field. Even though the findings are specific to the focal organisation, they provide insights into behavioural drivers and mechanisms that may also apply to other workplaces. Moreover, the fact that we randomised our study subjects enhances the generalisability of our findings.
5. DISCUSSION

This dissertation and the three papers that nurture it have examined how nudges can be applied in organisations to encourage behaviour change in support of CS. Based on the insights gained, the thesis creates theoretical advances for the micro-level CS literature and the underlying discourses of micro-CSR, employee green behaviour, and behavioural ethics. It also enhances insights for nudging research. Moreover, the thesis provides implications for the management of sustainable workplaces in practice. Below, I discuss the theoretical contributions of my thesis to the scholarly debates that my papers address and elaborate on the relevance of my findings for practitioners. I end with a reflection on the limitations of my dissertation and provide an outlook for future research.

5.1. Theoretical advances created by this thesis

The primary value of my dissertation stems from integrating nudging research with the micro-level CS literature. Acknowledging the interrelated nature of economic, environmental, and social issues that must be managed and balanced to advance CS (Rasche et al., 2023), this thesis goes beyond the fields of micro-CSR (Gond et al., 2017; Rupp & Mallory, 2015) and employee green behaviour (Norton et al., 2015; Zacher et al., 2023) that inform the psychological foundations of CS with a restricted perspective on either of the two non-economic dimensions of sustainability.

Instead, based on prior research (Bhattacharya et al., 2022; Pellegrini et al., 2018), this dissertation concentrates on ESB that addresses CS more completely across diverse ESG outcomes. Viewing ESB as ethical behaviour that is based on a shared moral understanding to act for the benefit of society (Bhattacharya et al., 2022), my research also expands the behavioural ethics literature that concentrates on ethical decision-making in organisations (Kish-Gephart et al., 2019; Treviño et al., 2006). Hence, overall, my PhD project contributes to three related but distinct research streams within the overarching micro-level CS discourse, namely micro-CSR, employee green behaviour, and behavioural ethics.

One common limitation of these three debates is that they fall short of insights into effectively encouraging employee engagement in favour of CS (Stahl et al., 2020). Notably, despite a heightened recognition of the relevance of the workplace context in shaping behaviour (Brammer et al., 2015; Carmeli et al., 2017; Newman et al., 2017; Norton et al., 2015, 2017; Rupp
& Mallory, 2015), there is a scarcity of research investigating management practices that induce behaviour change through alterations in employees’ decision situations (Goebel & Weißenberger, 2017).

Addressing this gap, the thesis demonstrates that nudges can facilitate behaviour change through situational cues that prompt intuitive reactions while encouraging reflection. Both mechanisms can influence perceptions about the norms and goals that matter in a situation in the long run. Thus, even though the results of my dissertation indicate that the immediate effects of nudges may be short-lived, the induced changes in behaviour can have more long-term impacts on decision-making by influencing employee perceptions and beliefs. This finding is important, given the long-term orientation of sustainability objectives (Rasche et al., 2023). The gained insights also affect the organisational climate literature in micro-level CS research (Norton et al., 2017; Newman et al., 2017). By influencing perceptions and beliefs, my dissertation suggests that nudges could potentially strengthen sustainability-oriented climates that give way to a shared moral understanding of advancing social welfare, thus serving as a potent mediator for ESB.

The acquired knowledge equally contributes to the nudging literature with novel insights on applying nudges in organisations, addressing an area in demand for further exploration (Chapman et al., 2020). Nudging towards effective and sustained behaviour change can be challenging when the individual and collective motivations for a particular behaviour diverge (Dimant & Shalvi, 2022). This challenge particularly pertains to the context of ESB. Unlike nudges addressing consumers in favour of their personal interests, nudges targeting employees in support of CS typically do not benefit these individuals directly. Instead, they rely on the cooperative behaviour of individuals to act for the benefit of society (Klege et al., 2022; Russell et al., 2016). My dissertation provides evidence that nudging can still be successful in such contexts and offers insights into the mechanisms that can drive employee behaviour change in different workplace situations. In addition, my PhD project stimulates a novel way of thinking about the indirect influence of nudges on employee decision-making via organisational climates. Empirical nudging research to confirm this relationship is still lacking. Further exploring this line of thought could address recent criticism of nudges’ focus on specific individual decisions rather than the systems individuals are part of (Chater & Loewenstein, 2022).

Even though there is a lot to learn for the nudging literature, the primary emphasis of this thesis lies in showcasing the relevance of nudging knowledge for the different streams of micro-level CS research. Therefore, I continue by discussing the theoretical advancements created for the micro-CSR, employee green behaviour, and behavioural ethics literatures, respectively.
5.1.1. Theoretical advances created by this thesis for the micro-CSR literature

Micro-CSR relies on insights from industrial psychology and OB to examine the effects of CSR on individuals (Rupp & Mallory, 2015). Respective studies mainly assess the impact of external CSR practices (i.e., those directed at external stakeholders) on employee attitudinal outcomes widely studied in OB (Brammer et al., 2007; Jones & Rupp, 2018). Conversely, there has been a scarcity of research investigating behavioural outcomes (Gond et al., 2017), with a few exceptions concentrating on fostering OCB for enhanced operational efficiency (Brammer et al., 2017; Newman et al., 2016).

This thesis advances the micro-CSR literature with a focus on employee behavioural outcomes that are directly linked to the sustainability performance of companies. For example, Paper 1 encompasses outcomes spanning ESG domains. It identified various nudging studies focusing on enhanced employee well-being and health as well as the participation of employees in altruistic activities, which are outcomes whose investigation has specifically been called for in micro-CSR research (Gond et al., 2017).

Moreover, my work contributes to existing research (e.g., Carmeli et al., 2017) with a deeper understanding of the mechanisms by which CSR practices influence employees concerning individual and situational moderators. This insight helps mitigate the risk of confusion arising in the micro-CSR literature regarding the factors that drive CSR engagement (Gond et al., 2017; Newman et al., 2017). Through examining nudging interventions that utilise varied contextual cues to activate distinct individual mechanisms of behaviour change, my dissertation provides insights into the person-situation interactions that underlie ESB. For example, Paper 1 highlights social norm nudges as frequently studied interventions to influence ESB. These interventions mostly relied on shaping beliefs about the prevalence of desirable behaviour among peers. The insights gained address the need for literature on how team attributes affect CSR-related employee responses (Gond et al., 2017).

Additionally, Paper 3 broadens the scholarly understanding of how the presentation of CSR concerns influences employee decisions. It advances the findings of Rupp et al. (2013) on the impacts of CSR initiatives on employee judgement and emotions with insights into the durability of cognitive and affective mechanisms evoked by sustainability interventions. Notably, my article shows that nudges evoking cognitive individual mechanisms through normative and gain cues have more durable effects than those triggering affective reactions. This finding offers implications about the areas of workplace practice where different types of intervention are most
suitable. Situations demanding quick decision-making might benefit from interventions encouraging intuitive reactions, whereas interventions promoting reflection should address domains with strategic significance.

5.1.2. Theoretical advances created by this thesis for the employee green behaviour literature

Unlike the micro-CSR discourse that prioritises attitudes over behaviour as the dependent variable (Jones et al., 2019), the employee green behaviour literature concentrates on behavioural outcomes, albeit limited to environmental matters. In studying these outcomes and how to influence them, employee green behaviour research remains widely restricted to cognitive factors (Zacher et al., 2023). The focus lies on fostering employees’ ability, attitudes, and motivations to act pro-environmentally through knowledge- and skills-enhancing practices and incentive schemes (Stahl et al., 2020). However, the success of respective interventions has been limited (Pellegrini et al., 2018).

This thesis advances the literature and informs the design of effective workplace policies with insights into the determinants of employee green behaviour at individual and contextual levels. Specifically, Paper 3 provides knowledge on fostering employee green behaviour through simple modifications in the choice environment that trigger affective, normative, and gain-oriented reactions. Interestingly, our study shows that behaviour change in favour of environmental sustainability is possible without any changes in attitudes but by arousing emotions. This finding contradicts the common understanding in the literature, informed by the TPB (Ajzen, 1991), that employee green behaviour is at least in part attitude-driven (Norton et al., 2015). Additionally, rather than fostering pro-environmental attitudes directly, our study demonstrates the value of emphasising complementary monetary gain motives to promote employee green behaviour among non-green employees.

Thus, even though it is important to strengthen employees’ pro-environmental attitudes to secure their long-term commitment to CS (Norten et al., 2015), the findings of my dissertation indicate that immediate behaviour change can be facilitated through different channels. Changes in attitudes may subsequently follow inherently. Social psychology research suggests that the cognitive and emotional components of decision-making must be addressed to influence a person's attitudes (Pickens, 2005). By evoking positive emotions linked to pro-environmental behaviour change and encouraging employees to reflect on the goals associated with these shifts,
sustainable norms and pro-environmental attitudes may develop gradually when the new behaviour becomes habitually performed (Sabbir & Taufique, 2022).

Moreover, in addition to examining the influence of nudges on specific behavioural outcomes, this thesis considers the implications of these interventions on the organisational climate, which is a relevant but understudied aspect in the literature on employee green behaviour (Norton et al., 2015; Zacher et al., 2023). The nudging interventions reported in Paper 3 all have been designed to embed employee green behaviour in the organisational climate by shaping feelings, perceptions, and beliefs about what matters to the organisation. In addition, Paper 2 offers considerations on how nudges could support cultivating a climate in which shared ethical values are recognised and lived, including for environmental objectives.

5.1.3. Theoretical advances created by this thesis for the behavioural ethics literature

Finally, this dissertation contributes to the behavioural ethics literature that informs the normative foundations of ESB (Bhattacharya et al., 2022). Contrary to research focusing on employee green behaviour, behavioural ethics scholars have long shown interest in understanding how the organisational context influences employee behaviour (Treviño, 1986, 1998). However, creating an ethical workplace environment remains an ongoing challenge, prompting a demand for research on context-oriented ethics interventions (Goebel & Weißenberger, 2017).

The present dissertation advances the literature with insights into how nudges can highlight shared values in employees’ choice environments. Notably, Paper 2 enhances our understanding of how nudges can complement E&C management by conveying contextual cues that raise employees’ moral awareness. Importantly, these cues can operate within informal systems of organisations by fostering the social identity and the perceived organisational support of employees, enriching the enduring discussion on values-oriented ethics management (Paine, 1994; Treviño et al., 1999; Weaver & Treviño, 1999), focusing on less-explored informal means for promoting ethical conduct.

By emphasising nudging as an approach to foster employees’ moral awareness and thereby enhancing their decision capacities, my thesis provides an alternative perspective to recently proliferating critical views on nudging in business ethics (Friedland et al., 2023; Rozeboom, 2023; Ruehle, 2023). Instead of portraying nudges as tools that diminish people’s agency (Friedland et al., 2023; Bovens, 2009), I emphasise their role in empowering employees to decide what they consider ethically right. This standpoint implies that nudges encourage individual reasoning rather
than bypassing it. My thesis rests on the assumption that reasoning can involve cognitive and non-cognitive elements that work together interactively, which nudges can address (Levy, 2019). Yet, nudges must be implemented carefully to ensure that employees benefit from this reasoning-enhancing function. I agree with critical perspectives that it is essential for employees to be sufficiently informed about the nudging initiatives at their workplaces (Ruehle et al., 2023), especially concerning the relevance of trust in behavioural ethics (Weaver & Treviño, 1999).

Moreover, considering the general ambition in behavioural ethics to raise employees’ moral awareness (Bazerman & Sezer, 2016), suitable nudges should involve an element of reflection. In this regard, my dissertation underscores the relevance of the emerging concept of Nudge Plus for behavioural ethics research. As discussed in Paper 2, Nudge Plus emphasises behaviourally informed interventions that allow people to reflect (Banerjee & John, 2021).

Finally, the dissertation contributes to the behavioural ethics literature by demonstrating its relevance to the wider CS discourse. Recognising the ethical foundation of CS is of paramount importance. Ultimately, sustainable actions should be informed by moral considerations about the right thing to do. As such, conflicts between economic, social, and environmental objectives should be resolved from an ethical perspective (Bañon Gomis et al., 2011), and business ethics can guide in this regard (Rasche et al., 2023). However, behavioural ethics research has paid little attention to establishing this link between ethical and sustainable conduct (Rupp et al., 2015). Through this thesis, I have highlighted the importance of ethical behaviour in terms of ESB to achieve greater sustainability in various ESG domains.

Given the extensive range of ESG outcomes related to CS, a key implication of my study is that nudging interventions should not merely direct employees towards specific sustainability goals but raise their awareness for shared ethical values that matter across different ESG concerns. This insight expands the conclusions of Guerci et al. (2015), who have stressed the relevance of exploring sustainable human resource management practices that can foster an ethical climate in which shared values are embedded beyond directly prompting a specific behaviour.

5.2. Practical relevance of this thesis

Understanding how nudges can contribute to CS objectives not only holds theoretical relevance, but also bears considerable practical significance. In times of increased regulatory and stakeholder pressure on companies to adopt evidence-based sustainability practices, organisations
seek innovative ways to improve their triple bottom line, including through workplace initiatives (Stahl et al., 2020). They are ready to embrace internal management initiatives to promote employee wellbeing and foster organisational members’ involvement in sustainability efforts (Lamm et al., 2015; Stahl et al., 2020). In pursuing this endeavour, the findings of my thesis offer valuable insights. They enrich practitioners’ comprehension of how nudges can be incorporated into the design of workplaces to facilitate ESB. The attractiveness of nudging interventions relates to their cost-effective and choice-preserving nature, distinguishing them from conventional control instruments like mandates and sanctions (Mukerji & Mannino, 2023).

More concretely, the frameworks offered by my papers provide guidance on the most suitable nudges for different workplace situations. Essentially, low-involvement choices that are frequently recurring, such as switching off office lights (Zacher et al., 2023), demand nudges like visual prompts that can shape rapid responses from employees. Conversely, high-involvement decisions, such as following through on strategic CS objectives (Zacher et al., 2023), require nudges like social norms that influence slower and more deliberative thought processes. Moreover, nudges, such as reminders, can be applied to encourage greater reflection, which offers an approach to enhance employees’ moral awareness.

In following the provided rules of thumb, practitioners should however recognise that nudges might not universally succeed (Hauser et al., 2018). While aiding nudge selection, my thesis emphasises the importance of tailoring these interventions for the intended context and audience. Moreover, my dissertation suggests that nudges should not be considered the only solution to promote ESB. Like most workplace interventions (Pellegrini et al., 2018), nudges have their limitations. Particularly because they rely on small and subtle cues, their effectiveness may be constrained when implemented in isolation in complex workplace situations. Therefore, my thesis recommends incorporating them as complements alongside established management practices.

First and foremost, it remains important that organisations have clear sustainability strategies in place, outlining overarching visions and ambitions. These strategic objectives must then be translated into coherent roadmaps and implementation plans that assign individual responsibilities to organisational members (Stahl et al., 2020). Furthermore, learning and development initiatives are fundamental to enhancing employees’ skills to perform sustainability activities. In addition, training campaigns are critical to familiarise employees with the organisation’s values and policies (Hauser, 2019). However, current training instruments fall short of stimulating values-oriented decision-making in actual workplace situations (Bazerman &
Tenbrunsel, 2011). This context is where nudges can enhance conventional workplace programmes by altering subtle situational elements that facilitate ESB. As choice-preserving interventions, nudges offer an advantage over mandates and sanctions, as the latter prescribes behaviour and may undermine intrinsic motivation to act responsibly (Tenbrunsel & Messick, 1999).

Nevertheless, there remain certain areas of business practice, where stringent rules and sanctions are necessary to improve CS. It is hard to pinpoint these areas categorically since the sources of behaviour may vary per situation. Generally, however, in contexts where people purposefully abuse systems based on self-interested calculation, enforcement may be needed (Feldman & Kaplan, 2021). Beyond these more formal elements, the tone from the top is decisive for employees’ engagement in sustainability efforts. Enhancing ESB is challenging without a clear commitment from leadership to support sustainability objectives (Hejjas et al., 2019).

Reflecting the observations from prior research (Crane, 2000; Linnenluecke et al., 2009; Lülfs & Hahn, 2014; Norton et al., 2015), the overarching aim of practitioners should be to develop an ethical climate that sensitises employees to sustainability. Nudges can be one of many interventions contributing to this objective. They should steer employees towards specific behavioural outcomes and foster awareness for shared ethical values that define a sustainability-oriented organisational climate. Hence, nudges should contribute towards creating a context where ESB emerges spontaneously beyond anticipated incidents, which has been identified as the most effective route for encouraging CS on the micro level (Guerci et al., 2015).

This avenue towards increased values orientation offers new areas for nudges to be practically implemented. One possibility is to actively involve employees in the development of nudging initiatives. As has been shown by Hejjas et al. (2019), employees are more responsive to sustainability interventions that they have co-designed. Actively involving employees in co-creating their choice environments can further reduce the risk of constraining the autonomy of nudging recipients (Ruehle, 2023).

Another managerial recommendation pertains to establishing nudging groups in organisations. These groups could compile lessons learned and provide advice on the design and implementation of nudges by various functional areas. Nudge units have become popular in public sector institutions. Drawing from these experiences, it is essential to assemble networked teams comprising top-level representatives and implementing-level experts. These networks are critical for effectively coordinating the execution of nudging interventions (Affi, 2017). Regarding CS, internal management practices must align with the overall sustainability orientation of
organisations (Guerci et al., 2015). This ambition requires a vertical integration between strategic and operative departments (Gond et al., 2012). While it seems unrealistic that organisations establish distinct nudging departments, they could form expert groups with representatives from different functional areas to advise interested units in developing, implementing, and evaluating sustainability-oriented nudges. Given the breadth of outcomes linked to ESB (Bhattacharya et al., 2022; Pellegrini et al., 2018), it would be beneficial for various functional areas to explore the application of nudging interventions. For example, human resource managers could use nudges to target social issues, whereas compliance and ethics officers could address governance issues. The expert committee could thereby help to leverage best practices across these teams.

5.3. Limitations and future research

This thesis is not without limitations that point to directions for future research. First, the dissertation includes three papers employing distinct research approaches: a literature review, a conceptual analysis, and an empirical investigation. While this diversity of papers constitutes a strength, it also implies that the primary database offered by my thesis is limited to one experimental study.

The employed experimental method allowed causal impact evaluation of workplace interventions, thereby addressing a weakness in micro-CSR and employee green behaviour research criticised for lacking objective study methods (Gond et al., 2017; Jones et al., 2019; Jones & Rupp, 2018; Norton et al., 2015; Rupp & Mallory, 2015). Moreover, our investigation generated actual field behavioural data, not self-reported evidence, a common limitation of studies investigating ESB (Paillé et al., 2014; Pellegrini et al., 2018). Randomising study subjects is another strength of experiments, which can enhance the generalisability of empirical findings (Chatman & Flynn, 2005). However, it is important to note that our experimental study took place in a single automotive organisation, which may limit the broader applicability of our results. Furthermore, the final sample size of our study was smaller than expected, thus compromising the statistical power of our findings.

There is a need for more mixed-methods research to enhance the empirical evidence base provided by my thesis. Future studies should pay greater attention to the behavioural drivers targeted by nudging interventions in different situations. Qualitative approaches, such as open-ended surveys, interviews, and focus group discussions, may be helpful as they can offer valuable
insights into the underlying causes of behavioural patterns in specific situations (Chatman & Flynn, 2005). Such context-specific investigation is essential for effectively informing attempts to change behaviour in organisations. However, one inherent challenge is that the more context-specific our insights become, the harder it gets to draw generalisations from them. Situation-specific qualitative findings should thus serve as a foundation for theorising about certain relationships. In the words of Kurt Lewin (1951, p. 169): “Nothing is as practical as a good theory”.

Based on a theory-driven approach towards the underlying conditions of a behavioural problem, nudging interventions can then be designed to address a range of comparable workplace situations. These interventions should continue to be experimentally tested. Moreover, beyond conducting surveys and interviews, “mechanism experiments” merit further exploration (Ludwig et al., 2011). The latter are experiments that test the proposed psychological mechanisms underlying a targeted decision process. The gained insights can enhance the design and efficacy of nudging interventions (Hauser et al., 2018) appropriate for addressing workplace behaviour in similar contexts.

Another aspect that demands further investigation is the potential of the organisational climate to act as a mediator between nudging and ESB. Despite stressing the centrality of fostering ethical workplace climates and accounting for the possibilities of nudging in doing so, this thesis did not empirically test the impact of nudges on ethical climates and their resulting influence on ESB. Measurement of this intermediary function remains for future research. Evaluating this indirect nudging effect implies a shift in focus away from directly measuring predefined decisions to examining perceptions of ethical climates and their subsequent impacts on behaviour more generally. This change in emphasis involves considerable challenges that call for combining different methodologies. Perceptions of organisational climates are typically inquired using questionnaires (Cullen et al., 1993). The subsequent assessment of how ethical climates influence employee choices should involve measuring actual behaviour whenever possible. However, considering outcomes beyond a single anticipated action may be necessary to grasp the full impact of ethical climates on ESB. Hence, future research should explore how best to measure a broader range of choices guided by shared values.

Another limitation that deserves consideration pertains to the short-lived effects of nudging interventions (Friedland et al., 2023). As shown by Paper 3, the impacts of nudges tend to diminish over time, being largest immediately after the intervention’s initial implementation. This finding is unsurprising since nudges convey subtle stimuli that individuals typically react instantly. In
fact, most workplace interventions, including goal setting and incentive schemes, are known to induce short-term behaviour change. Conversely, their long-term effects remain inconclusive or have proved to disappear once the intervention is discontinued (Unsworth et al., 2013). A related challenge pertains to the risk of habituation to nudging interventions (Russel et al., 2016). Individuals do not always pay attention to every stimulus in their surroundings. Thus, there may be a chance that people get accustomed to the presence of nudges, which could reduce their effects over time (Hardin et al., 2020). However, particularly in the context of CS, where the focus is on long-term value creation (Rasche et al., 2021), the significance of persistent behaviour change cannot be understated.

By refocusing the utilisation of nudges to cultivate ethical climates, more long-term adherence to sustainability may be achieved. When shared ethical values are deeply ingrained in the workplace context, they can have a more enduring impact on decision-making, as employees may receive a variety of contextual stimuli throughout their daily workplace interactions that can encourage ESB (Guerci et al., 2015). Yet, developing ethical climates is a long and encompassing endeavour that depends on integrating multiple workplace interventions and initiatives (Treviño & Nelson, 2021). Future research should pay more attention to studying the complementarities of nudges with other workplace practices to harness the synergies that can enhance ethical climates, potentially yielding more enduring impacts on behaviour change of employees.

The proposed expansion in perspective beyond nudging predictable individual actions towards the influence of nudges on organisational climates would further respond to recent criticism of nudging research raised by Chater and Loewenstein (2022). These scholars claim that the focus on “individual behaviour (adopting an “i-frame”) instead of targeting the wider system in which individuals interact (an “s-frame”)” has misguided policy (p. 2). Studying the role of nudges in shaping the relationship between organisational climates and individuals would close this i-frame versus s-frame divide. It would also bridge the gap between sociological and psychological streams of micro-CSR research (Gond & Moser, 2021), focusing on the interaction between an organisation’s social context and individual decision-making. Overall, this dissertation thus recommends a deeper integration of group-dynamic theories into nudging research to generate insights that can help foster ESB in support of CS more endurably.
6. CONCLUSION

This thesis was motivated by the urgent need for companies to adopt more sustainable business practices. Taking a micro-level perspective, the dissertation delved into the application of nudging in organisations as means to promote behaviour change in support of CS. It contributed to the micro-level CS literature with insights into the drivers and mechanisms of ESB that nudges can address through changes in the workplace context. Collectively, the findings of my dissertation suggest encouraging prospects for the use of nudges to promote ESB by addressing cognitive and non-cognitive determinants of individual decision-making. This potential can be leveraged by integrating nudges with other management practices to harness the synergies of each individual approach. Looking ahead, it is essential for future research to pay more attention to the behavioural barriers that need to be addressed in specific situations and to tailor nudging interventions to the nuances of the respective work context. Moreover, there is a need for deeper exploration into the mediating function of organisational climates when implementing nudges within organisations.
7. REFERENCES


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PART II: PAPERS
Nudging Employees for Corporate Sustainability:  
A Systematic Evidence Map

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Abstract

Organisations are increasingly under pressure to deliver on their promises of corporate sustainability. One approach is to enhance sustainable choices in the workplace. This chapter compiles knowledge from 51 articles (70 empirical studies) on behaviourally informed interventions (nudges) applied in organisations to promote employee sustainable behaviour across environmental, social, and governance criteria. We systematically map and synthesise information on (a) target persons, (b) barriers to behaviour change, (c) nudging types and mechanisms, and (d) behavioural outcomes into a coherent framework. Our findings highlight notable gaps, methodological limitations, and imbalances in prior literature. With most attention directed to the effects of social norms, there is a lack of studies evaluating affective nudging mechanisms and emotional barriers to behaviour change. Regarding the behavioural outcomes, existing studies mainly focus on changes in workplace routines concerning resource conservation and employee wellbeing. Key knowledge gaps relate to high-impact decisions that enhance the sustainability of work products and processes. We also note a lack of cross-cultural studies. To address the identified issues, we establish an agenda for future research, focused on four main challenges with practical relevance.

Keywords

Nudging, employee sustainable behaviour, ESG, corporate sustainability, evidence map, workplace interventions
8.1. Introduction

Organisations increasingly acknowledge their role in addressing today’s grand societal challenges through responsible business actions. They commit to corporate sustainability (CS), which focuses on integrating environmental, social, and economic considerations into ways of doing business to create “long-term ecological balance, societal welfare, and stakeholder value” (Rasche et al., 2023, p. 8). The issues underlying CS can be captured in terms of environmental, social, and governance (ESG) dimensions (Grewal & Serafeim, 2020), assuming that governance issues support and enable environmental, social and economic objectives of corporations (Rasche et al., 2023).

Beyond the formulation of strategic CS ambitions and policies, organisational change in favour of ESG objectives also relies on alterations in the behaviour of employees (Ones & Dilchert, 2012). All CS initiatives and actions can ultimately be traced to members of organisations. Encouraging employee sustainable behaviour (ESB) in support of ESG concerns is thus important to promote CS from within the organisation (Pellegrini et al., 2018). There are various ways in which organisations can foster ESB, including through widely known training and reward schemes (Dumont et al., 2017; Kramar, 2014). Empirical evidence on the effectiveness of conventional workplace policies is limited though (Pellegrini et al., 2018), which raises a need for exploring alternative management tools.

With our study, we consider the application of behaviourally informed interventions – or “nudging” – as an internal management practice to promote ESB that is thus far understudied in the CS literature. However, respective interventions have been empirically evaluated in the workplace by research from diverse disciplines, and our aim is to synthesise and map these studies. An evidence synthesis can inform the design and evaluation of future workplace interventions with novel insights about the psychological foundations of ESB that nudges can address.

Nudges are modifications in the physical or social decision context that “alter people's behaviour in a predictable way without forbidding any options or significantly changing their economic incentives” (Thaler & Sunstein, 2008, p. 6). They can take various forms, such as defaults, which are pre-selected choice options, or the use of social norms that emphasise what

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2 We take note that other papers in our focal area use the term corporate social responsibility (CSR) to refer to a similar relationship between economic, environmental, and social objectives of corporations. Even though the concepts of CSR and CS have different research origins (Bansal & Song, 2017), they are increasingly converging and sometimes even used interchangeably. Throughout this chapter, we primarily use the term CS, also because it has become the commonly used terminology in practice (Rasche et al., 2023).
others do or approve of (Sunstein, 2014). The idea behind nudging builds on dual process theory, which posits that people engage in two types of thought: System 1 operates fast, intuitively and often emotionally; System 2 functions more slowly, more deliberatively, and logically (Kahneman, 2012, p. 21). In practice, these systems work interactively (Banerjee & John, 2021). However, many choices in the workplace heavily rely on System 1, which involves mental shortcuts to reach efficient, though sometimes undesirable, outcomes (Beshears & Gino, 2015). Subtle changes in the choice environment can address these processes by linking the behavioural stimuli with the actual choices as closely as possible (Thaler & Sunstein, 2008, 2021).

Currently used mostly in public policy domains (Sunstein & Reisch, 2017), nudges have sparked the interest of management teams to guide the choices of employees (Beshears & Gino, 2015). In fact, one of the early success stories of nudging relates to workplace decisions on employee pension plans (Thaler, 2015). Overall, however, research on nudging in organisations is still nascent (Chapman et al., 2020) and spread across disciplines (Beshears & Kosowsky, 2020), which poses a risk of fragmentation. The present chapter therefore aims to synthesise existing knowledge from workplace nudging studies addressing ESG issues. In particular, we seek to map and consolidate insights on the following core components that provide foundations for the design and application of nudges to enhance ESB: (a) targets (who are the persons being nudged?), (b) barriers (what psychological factors constrain behaviour change?), (c) modes (which nudges are applied and how do they work?), and (d) outcomes (what are the behavioural outcomes in support of ESG criteria?).

We follow the approach of prior reviews focusing on ESB and consider studies targeting incumbent and prospective employees at all levels, including managers, executives, and job seekers (Gond et al., 2017; Rupp & Mallory, 2015). For the barriers to and modes of behaviour change, we distinguish between those concerning System 1 and those targeting System 2 (Beshears & Kosowsky, 2020). We review both task- and non-task-related aspects of ESB, i.e., the activities that employees perform as part of their professional roles and those that they undertake outside their formal jobs, but in the workplace nonetheless (Ones & Dilchert, 2012). Hence, we focus on diverse ESG issues that employees can influence, such as energy conservation and emission reduction, resource use and recycling, improvements in diversity, employee wellbeing, stakeholder rights, compliance and integrity (Wagner & Boyle, 2022).

Our systematic evidence map contributes to the rising stream of micro-level CS literature by synthesising insights from different disciplines on the use of nudges as tools to enhance ESB. Whereas CS research has long centred on the macro level (Aguinis & Glavas, 2012), more recent
literature has turned to insights from human resource management (HRM) and organisational behaviour (OB) to study the role of individuals in relation to responsible business conduct (Aguinis & Glavas, 2019; Gond et al., 2017; Jones & Rupp, 2018). Yet, most existing publications focus on attitudinal rather than behavioural outcomes of responsible workplace initiatives (Gond et al., 2017); and the part of research that actually studies employee behaviour change mainly relies on the theory of planned behaviour (TPB) (Ajzen, 1991) to explain ESB (Norton et al., 2015). However, the TPB exclusively considers cognitive predictors of decisions and neglects non-cognitive factors of behaviour (Sabbir & Taufique, 2022). Hence, the focus is on consciously held values, interests and beliefs, whereas the role of habits and emotions, as well as biases and heuristics, remains largely understudied (Gond et al., 2017). By focusing on alterations in the decision context, nudges can target both System 1 and System 2 processes (Beshears & Kosowsky, 2020) and can thus address the barriers to behaviour change that are beyond human consciousness. The current review maps different barriers and the types of nudge that respective intervention studies in the workplace focus on, thereby providing new insights on the diverse mechanisms driving ESB and offering practical guidance on the design of context-oriented policies to induce sustainable behaviour change.

Finally, we identify key knowledge gaps, from which we derive an agenda for future research with practical relevance, focused on four main challenges: (a) specifying the relationship between nudging and constructs related to ESB, (b) expanding the analysis of nudging types and mechanisms, (c) incorporating a larger range of target persons and behavioural outcomes, and (d) considering a greater diversity of research methods.

8.2. Method and scope of evidence synthesis

Our study seeks to bridge two multi-disciplinary fields of research, namely the area of nudging (Beshears & Kosowsky, 2020) and the one of ESB (Gond et al., 2017). To cover the breadth of this literature, the scope of our evidence map spans different disciplines, including OB, management, business ethics, psychology, economics, health, and environmental policy. Our study was pre-registered and we ensure transparency and replicability of our methodology by adhering to the Reporting Standards for Systematic Evidence Synthesis, which are guidelines for

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3 See osf.io/3axns
4 A detailed description of the procedure is provided in Appendix A.
standardising review procedures of evidence-based interventions in management and policy (Haddaway et al., 2016).

We started the search for literature in 25 selected academic journals that had either been the basis of prior reviews with a focus on ESB (Aguinis & Glavas, 2012; Gond et al., 2017) or had previously been identified as hotspots for research on nudging (Beshears & Kosowsky, 2020; Reisch et al., 2021). Because of the time-consuming nature of manual screening, we restricted our initial search to articles published between April 2008 and February 2021. April 2008 served as cut-off date since it marks the first publication of the seminal book “Nudge”, subsequently sparking increasing attention for behaviourally informed interventions among researchers and practitioners (Beshears & Kosowsky, 2020). We manually screened the selected journals at abstract and title levels for nudging interventions conducted in organisations in support of ESG criteria. The manual screening helped us gain a better understanding of available studies in our focal area and the terminology that these studies used. Based on the attained insights, we developed a Boolean search string for a subsequent search in five databases (Business Source Complete, PsycINFO, Science Direct, Scopus and Web of Science Core Collection) that cover publications from diverse disciplines, reflecting the interdisciplinary scope of our study. No time restrictions were applied to this open search. As recommended for systematic evidence syntheses (Haddaway et al., 2016), we also searched for additional sources of grey literature to ensure a balanced representation of available knowledge.

Our systematic search was completed in February 2021 and resulted in 6,805 articles. After the removal of duplicates and literature screening at title, abstract and full text levels, 51 articles, reporting 70 individual studies, met the inclusion criteria and were ultimately considered for evidence synthesis. This small inclusion rate partly reflects strict inclusion requirements that we applied, as we only considered intervention studies comparing before-after or control-treatment scenarios. At the same time, the small sample may signal that nudging interventions are still understudied in organisations as opposed to public policy domains, despite the evidence base growing (Chapman et al., 2020). Accordingly, we identified an upward trend for the number of eligible articles published over time, with a particularly strong increase in publications for the last five years. Remarkably, the earliest included study was already published in 1996, showing that behaviourally informed interventions existed before they were first coined as nudges by Thaler and Sunstein (2008). In terms of the geographical locations of conducted studies, we found a high

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5 Detailed information on the inclusion criteria is provided in Appendix A.
concentration in North America (51 %) and in Europe (33 %). This reconfirms the findings of prior systematic maps that nudges, thus far, are primarily investigated in a few regions of the world (Reisch et al., 2021).

8.3. Main findings

Our main findings are presented along the four core components of our map: (a) target persons, (b) barriers to behaviour change, (c) nudging types and mechanisms, and (d) behavioural outcomes in support of CS. Figure 1 serves to illustrate and integrate these insights into a coherent framework. Table A3 (in Appendix A) provides further synthesis of the identified knowledge clusters and gaps.
Figure 1: Nudging organisational members towards behaviour change in support of CS
8.3.1. Target persons

With the rise in micro-level CS research, the role of employees as agents of change for sustainability is gaining relevance (Gond et al., 2017; Rupp & Mallory, 2015). After all, even though sustainability-related initiatives are planned and completed on behalf of corporations, it is employees at different levels who enact organisational change through their behaviour: leaders take strategic decisions and implement organisational policies; and the broader mass of employees contributes to the achievement of such policies with their daily actions (Ones & Dilchert, 2012). It is thus important to address organisational members at all levels through appropriate workplace initiatives (Newman et al., 2016). We proceed by mapping the targets of the organisational nudging studies we reviewed to demonstrate the gaps and imbalances identified in this regard.

Target persons in our sample spanned across managers, employees, and job applicants. The majority of reported interventions (74 %) addressed regular employees regarding aspects of their routine behaviour in office environments, such as the use of electricity or paper. Studies that focused on managers (24 %) mainly addressed human resource officers to encourage equal representation and diversity in recruitment (Bohnet et al., 2016; Feng et al., 2020; Uhlmann & Cohen, 2005; Williams, 2018). A few studies further centred around production managers, aiming to promote their uptake of environmentally sustainable manufacturing techniques (Hummel & Hörisch, 2020; Lee & Hageman, 2018). A series of studies by Desai and Kouchaki (2017) targeted the ethical behaviour of workplace superiors. They revealed that the display of moral symbols by subordinates could discourage superiors from both enacting unethical behaviour and asking their subordinates to conduct unethical actions. This bottom-up approach seems relatively unexplored, though equally relevant. It points to possibilities for HRM managers to actively encourage employees to make specific changes in their workspaces that could nudge the behaviour of leaders. None of the reported nudges explicitly targeted the behaviour of executives. Finally, only one study in our sample focused on prospective employees. It evaluated the effect of a nudging intervention on the attraction of diverse job applicants (Gee, 2019).
8.3.2. **Barriers to behaviour change**

To successfully promote behaviour change, understanding and removing the barriers to desirable decision-making is necessary (Hauser et al., 2018). Most nudges in our sample referred to concrete barriers that they sought to address in order to enhance ESB. Reference to these barriers was primarily based on assumption though rather than empirical identification, which may constrain intervention success (Hauser et al., 2018). Focal barriers concerned both aspects that are consciously accessible to employee cognition (System 2) and those that harness behavioural automatisms (System 1).

*Barriers related to System 1*

The majority of reported nudging interventions addressed mental barriers that relate to System 1. Frequently described psychological problems in our sample are *inertia* and *present bias*, whereby people avoid the cognitive burden of complex decision-making and neglect positive future outcomes of the target behaviour (Thaler & Benartzi, 2004). These barriers were particularly noted
in relation to the participation in retirement saving plans (Blumenstock et al., 2018; Choi et al., 2017; Clark et al., 2014; Madrian & Shea, 2001; Thaler & Benartzi, 2004). We considered the latter under the social component of CS as an aspect affecting employee welfare (Grewal & Serafeim, 2020). In the ethical domain, moral unawareness is the most reported barrier, which refers to a cognitive state in which people do not recognise the moral aspects of the decisions they are facing, since they focus on other more salient concerns (Desai & Kouchaki, 2015, 2017; Hardin et al., 2020). Regarding workplace inclusion and diversity, reported interventions sought to address unconscious gender and racial biases (Bohnet et al., 2016; Feng et al., 2020; Williams, 2018). Habits were another frequently identified non-salient barrier to changing routine workplace choices across various ESG areas (Egebark & Ekström, 2016; Holland et al., 2006; Velema et al., 2018; Venema & van Gestel, 2021). Only one study in our sample focused on the role of negative emotions in terms of feeling guilt as a barrier to delegating tasks experienced by female managers (Akinola et al., 2018).

### Barriers related to System 2

In terms of barriers constraining System 2 processes, studies frequently reported a lack of financial incentives. This problem was particularly raised by research focusing on energy conservation as one way of reducing emissions in organisations, since employees do not have the same cost-saving motivation at work as at home. Whereas at home individuals can save expenses by reducing their energy consumption, at work the same behaviour does not benefit them financially (Carrico & Riemer, 2011; Ornaghi et al., 2018; Russell et al., 2016; Siero et al., 1996). This lack of financial incentives can impact personal attitudes, which are a core determinant of the TPB (Ajzen, 1991) and the predominant focus of prior research on ESB (Norton et al., 2015). Attitudes refer to favourable evaluations of the target behaviour and its likely consequences (Ajzen, 1991). Additionally, studies frequently reported barriers that concern a lack of perceived behavioural control, which is another key component of the TPB (Ajzen, 1991). It refers to “the perceived ease or difficulty of performing a behaviour” (Ajzen, 1991, p. 188) and depends on subjective evaluations of resources and opportunities available to people (Ajzen, 2020). In accordance with this definition, eight studies in our sample referred to diffused responsibility as a psychological barrier, which arises when employees do not feel personally responsible to act desirably on behalf of the organisation (Klege et al., 2018; Mamede et al., 2021; Oppong-Tawiah et al., 2020). Only one study considered a lack of knowledge as a barrier to behaviour change (Stöber et al., 2019),
which can equally have a negative impact on perceived behavioural control, when people miss
the expertise to perform an envisioned action (Ajzen, 1991). Evidence on negative subjective
norms as a psychological problem was limited too. The latter refers to “the perceived social
pressure (not) to perform the behaviour” and is the final determinant of the TPB (Ajzen, 1991, p.
188). In our sample, this type of barrier was reported for women in management positions, who
chose to delegate less responsibilities than their male colleagues due to negative social role
perceptions associated with delegating (Akinola et al., 2018).

![Figure 3: Barriers to behaviour change](chart)

8.3.3. Nudging types and mechanisms

Studies in our sample evaluated a diverse range of nudges that rely on different psychological
mechanisms to address the identified barriers to behaviour change. In contrast to prior research
on conventional workplace interventions, which heavily focus on changing conscious beliefs
(Dumont et al., 2017), the reported nudges engage System 1 and System 2 processes. Hence, they
work by involving both cognitive and non-cognitive elements of decision-making. We continue
by mapping these nudges following a categorisation by Sunstein (2014). We further cluster respective types of nudges based on whether they primarily address System 1 or System 2, as previously proposed by Beshears and Kosowsky (2020). Subsequently, we compile insights about the acceptance of reported interventions among the target population.

**Nudges engaging System 1**

Regarding nudges that operate via System 1, *defaults* and *simplifications* were the most frequently reported interventions. The former induce behaviour change by *automating* certain dimensions of people’s thought processes; the latter *simplify* decisions (Sunstein, 2014). Both types of intervention are popular as tools to promote retirement savings, thereby addressing barriers such as inertia and status quo bias (Blumenstock et al., 2018; Choi et al., 2017; Clark et al., 2014). Relatedly, nudges that increase the *ease and convenience* of the target behaviour (Sunstein, 2014) were investigated to enhance retirement savings and aspects of employee health, such as eating habits and physical routines (Baskin et al., 2016; Pechey et al., 2019; Velema et al., 2018). They work by reducing the perceived difficulty of performing a specific action (Sunstein, 2018). Another series of studies centred on a nudge that triggered System 1 by partitioning job candidates according to their gender, thereby *harnessing biases* that impede diversity (Feng et al., 2020). Furthermore, three studies in our sample focused on *evoking emotions* for behaviour change through the application of *framing* messages (Akinola et al., 2018; Van der Meiden et al., 2019; Zlatev & Rogers, 2020).

**Nudges engaging System 2**

The majority of reported nudges work by activating System 2, even if they frequently target barriers related to System 1, thus demonstrating the interactive nature of System 1 and System 2 (Banerjee & John, 2021). For instance, one nudge involved changes in the choice architecture of a candidate evaluation decision, whereby job applicants were evaluated jointly rather than separately to address unconscious gender bias and instead raise awareness for diverse candidate selection (Bohnet et al., 2016).

Overall, we identified a strong focus on *social norms* (32), which seek to elicit or change social expectations (Bicchieri & Dimant, 2022) through descriptive (what others do) or injunctive (what others approve) messages (Cialdini et al., 1991). Social norms may engage System 2 by
raising the degree to which people feel accountable for their actions (Beshears & Kosowsky, 2020). The strong focus on social norm nudges may relate to the relevance of peer influence in organisations. Employees typically work in teams and spend a significant amount of time with their colleagues. Their behaviour is thus easily observed by peers, and they may be especially responsive to what others do and think (Goldstein & Cialdini, 2011).

In particular, environmental workplace studies focusing on energy conservation evaluated norm nudges. Notably, from the perspective of the TPB (Ajzen, 1991), these nudges relied on mechanisms linked to subjective norms, whereas the barriers they sought to address concerned unsupportive attitudes and a lack of perceived behavioural control (Carrico & Riemer, 2011; Charlier et al., 2021; Klege et al., 2018; Ornaghi et al., 2018; Russell et al., 2016; Siero et al., 1996; Wong-Parodi et al., 2019). Thus, the cognitive barriers and intervention mechanisms do not always seem to match directly but may relate indirectly as motivational factors of ESB (Sabbir & Taufique, 2022). Moreover, contrary to the common understanding of ESB (Norton et al., 2015), behaviour change seems possible without any changes in attitudes directly.

Another popular nudging strategy to target routine behaviour in our sample was informing about past choices (Gosnell et al., 2020; Hoffmann & Thommes, 2020; Orland et al., 2014; Ornaghi et al., 2018), which may equally function by increasing accountability for one’s actions (Beshears & Kosowsky, 2020). Studies in the ethical domain mainly relied on framing and priming via visual or written cues to raise the moral awareness and hence the accountability of employees (Desai & Kouchaki, 2017; Hardin et al., 2020). Only one intervention that equally related to accountability-raising mechanisms was explicitly designed for the cultural context it addressed; it took the form of a religious symbol and targeted the subjective interpretation and motivation for waste reduction of Chinese employees (Wu & Paluck, 2018).

Less studies in our sample evaluated the effects of information disclosure (Clark et al., 2014; Mamede et al., 2021; Montagni et al., 2020) and reminders (Fukuyoshi et al., 2021; Haile et al., 2020; Mamede et al., 2021; Russell et al., 2016) that help people recall important information thus encouraging reflection (Sunstein, 2014). Finally, only three studies analysed implementation intention and pre-commitment nudges (Clark et al., 2014; Holland et al., 2006; Milkman et al., 2011), whose underlying mechanisms rely on planning prompts (Beshears & Kosowsky, 2020). None of the included studies focused on warnings, which have been described as another important nudging strategy (Sunstein, 2014).
In addition to the nudging types and their mechanisms, we accounted for the acceptance of implemented nudges among the target population. Since nudges, by their nature, are choice-preserving, people might not stick to them if they associate the interventions and their underlying goals with psychological costs (Tikotsky et al., 2020). Particularly in the workplace, where organisational and individual objectives may not always correspond, nudges may not be effective if employees’ attitudes are unsupportive of respective policies (Dewies et al., 2021). Moreover, if nudges are not fully transparent, the intervention recipients might perceive them as intrusive once they learn about the interventions (Hagman et al., 2015). Only 14 studies in our sample considered the level of nudging acceptance among employees though. Ten of them reported positive experiences. The remaining studies referred to mixed (2) or negative (2) perceptions.

**Figure 4: Nudging types and mechanisms**

**Nudging acceptance**

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8.3.4. Behavioural outcomes in support of CS

Prior research on the micro-foundations of CS has called for studies that objectively measure the effects of responsible corporate initiatives (Gond et al., 2017; Rupp & Mallory, 2015). We extend knowledge in this regard by reviewing workplace nudges that rely on evidence-based testing to determine outcome effectiveness (Beshears & Gino, 2015). Although respective studies rarely associate their research with CS, they focus on specific ESG components that employees can support through their behaviour to promote sustainable organisational change (Wagner & Boyle, 2022). We proceed by consolidating the diversity of behavioural outcomes studied across ESG concerns and consider the methods used for outcome measurement next.

Environmental concerns

Regarding the environment, ESB can be defined as “scalable actions and behaviour that employees engage in that are linked with and contribute to or detract from environmental sustainability” (Ones & Dilchert, 2012, p. 87). The most frequently targeted behaviour in our sample that falls under this definition is energy conservation. Studies mainly focused on the use of electricity and heating in office and production facilities in this regard (Klege et al., 2018; Oppong-Tawiah et al., 2020; Orland et al., 2014; Ornaghi et al., 2018; Russell et al., 2016; Siero et al., 1996; Wong-Parodi et al., 2019); some also considered fuel-efficient transportation in the aviation and freight industries (Gosnell et al., 2020; Hoffmann & Thommes, 2020). Five more studies in our sample focused on waste reduction and recycling, mainly concerning paper use in offices (Chakravarty & Mishra, 2019; Degirmenci & Recker, 2018; Egebark & Ekström, 2016; Holland et al., 2006). Only one reported nudge targeted waste reduction in manufacturing (Wu & Paluck, 2018). Evidence on the application of nudging in relation to strategic environmental decisions is limited, with just two papers focusing on the uptake of clean production techniques (Hummel & Hörisch, 2020; Lee & Hageman, 2018).

Social concerns

In terms of social activities, we were interested in interventions that enhance support for human capital both in organisations and society (Kramar, 2014; Wagner & Boyle, 2022). Reported nudges in this category represented the largest share in our sample (47%). Yet, all of them were
steered towards the wellbeing and equal representation of employees. Evidence on philanthropic activities for the benefit of external communities, such as employee charitable giving and volunteering is lacking. The most frequently targeted activity concerns employee participation in salary-linked retirement saving plans (12). Initiatives focusing on diversity and inclusion in terms of gender (Akinola et al., 2018; Bohnet et al., 2016; Feng et al., 2020; Gee, 2019; Uhlmann & Cohen, 2005) and race (Williams, 2018) are often reported as well. Ten more studies focus on employee health, mainly regarding food choices (Montagni et al., 2020; Pechey et al., 2019; Velema et al., 2018) and fitness at work (Haile et al., 2020; Mamede et al., 2021; Van der Meiden et al., 2019; Venema et al., 2018). Behavioural outcomes related to the protection of human rights and occupational safety have not been addressed, possibly reflecting the strong concentration of reported interventions in the Global North, where employee rights are guaranteed by binding regulation (Schuler & Jackson, 2005).

Governance concerns

The final area of ESB that we focus on contributes to the sound governance of organisations. This may include ethical employee conduct in relation to stakeholder rights, compliance, and risk mitigation as well as professional integrity (Wagner & Boyle, 2022). We identified eight studies focusing on financial risk mitigation. They evaluated the application of nudges to reduce the risk of fraud and overbilling (Desai & Kouchaki, 2015; Hardin et al., 2020). Another series of studies considered more general concerns of ethical behaviour that go beyond compliance, thus corresponding to professional integrity (Desai & Kouchaki, 2017; Pascual-Ezama et al., 2015; Stöber et al., 2019). Finally, only one study focused on the governance of stakeholder rights by evaluating a nudge to enhance stakeholder considerations in a strategic business situation in the mining industry (Clark et al., 2014).
Methods and outcome measurement

The predominant methodology included studies used to determine intervention outcomes was experimental testing. The strength of this approach is that it allows inferences about causality, which is welcome in the literature on ESB (Norton et al., 2015). Almost half of the evaluated interventions rely on field experiments that are based on actual behavioural data. Survey and laboratory experiments are frequently reported as well. However, a methodological limitation of many studies concerned the combined evaluation of different nudging types, which prevents disentangling their effects on outcomes and makes it hard to understand the underlying mechanisms driving behaviour change (Hauser et al., 2018). As expected, due to the comparator criterion, no pure qualitative study made it into our map. However, several eligible studies (10) complemented their quantitative work with elements of qualitative research, such as semi-structured interviews or open-ended surveys, primarily to identify underlying barriers to behaviour change or to evaluate nudging acceptance.
8.4. Key challenges and research directions

By mapping and synthesising nudging intervention studies addressing ESG issues in the workplace along four components – targets, barriers, modes, outcomes – we have provided an integrative framework to inform the use of nudges for enhancing ESB. Based on the identified knowledge clusters and gaps, we suggest that several critical issues limit our current understanding of sustainable workplace nudging and require further investigation. We end with a discussion of these issues, presented as four key challenges that future research should address to advance insights for scholars and practitioners focusing on ESB.

8.4.1. Specifying the relationship between nudging and constructs related to ESB

We compiled contributions on workplace nudges from diverse disciplines that rarely associate their research with theoretical constructs related to ESB. This complicates the task of integrating and expanding existing frameworks for explaining ESB, such as the TPB (Ajzen, 1991), with the insights gained from reviewed intervention studies.

To promote the application of nudging as sustainable HRM policy (Kramar, 2022), future conceptualisation is necessary to derive generalisable insights about the drivers and mechanisms of sustainable workplace behaviour that nudges can address. Organisations typically rely on a variety of internal practices to enhance ESB (Norton et al., 2015). To determine the optimal combination of such instruments, an advanced understanding of the determinants of ESB is crucial for managers. In psychology, decisions are frequently conceptualised as a function of a person and their environment (Lewin, 1951). Managers thus need to know how contextual features, such as the organisational climate, and how individual characteristics, such as knowledge and skills, may best be leveraged to achieve desirable behaviour change. Nudging can serve as a valuable complement to reinforce positive aspects of the organisational context.

Our map particularly confirms the need to integrate insights on the influence of group dynamics on individual behaviour, which were widely studied by interventions in our sample focusing on social norms. While group-dynamic theories are well established in OB and psychology literatures (Foster, 2017), research on workplace sustainability is only beginning to consider the role of organisational climate and team-level characteristics in explaining ESB (Norton et al., 2014, 2015, 2017). Notably, future studies should consider how nudges can contribute to establishing new social norms in organisations. Both nudging and ESB focus on the
behaviour of individuals rather than teams (Foster, 2017; Ones & Dilchert, 2012). However, when enough people are nudged, the newly exposed behaviour has the potential to become a norm, to which entire work groups are likely to conform, thus encouraging wider organisational change in the long term (Foster, 2017).

8.4.2. Expanding the analysis of nudging types and underlying mechanisms

Our evidence map revealed a strong focus on specific types of nudges, particularly social norms, which points to a need for future meta-analyses to determine intervention effectiveness, also in comparison to non-workplace settings. Other nudges like reminders, pre-commitment and warnings deserve more experimental investigation, as they may be particularly suited to influence predictable workplace tasks.

Regarding the underlying mechanisms of evaluated nudges, we identified a strong focus on awareness-raising processes, often evoking a switch in judgement modes from System 1 to System 2. We find this a welcome trend, considering that nudges are sometimes criticised for influencing behaviour in ways that the target population may not fully recognise (Beshears & Kosowsky, 2020). Nevertheless, despite the relevance of awareness-raising nudges, there remains a need to learn more about non-cognitive mechanisms driving ESB (Sabbir & Taufique, 2022). We specifically recommend further analysis of nudges addressing System 1 barriers and mechanisms like affection that remain understudied in the ESB literature (Norton et al., 2015; Sabbir & Taufique, 2022). Positive emotions might play a particularly important role for enhancing ESB among members who do not possess strong beliefs and attitudes in favour of sustainability (Bissing-Olson et al., 2013). Future nudging studies should test this relationship.

In addition, there is a clear lack of research on nudges that account for the local context of intervention implementation (Wu & Paluck, 2018). Sustainable HRM acknowledges the role of political, social and cultural factors that influence the success of internal policies (Kramar, 2022). Different values and beliefs can inform behaviour in organisations in different geographical areas (Treviño et al., 2006). Neglecting the role of subjective stimuli perceptions may constrain intervention replication in other locations (Hauser et al., 2018). It is thus critical to design workplace nudges that reflect culture-specific dimensions and to expand their analyses beyond Western countries.

Moreover, to gain deeper insights into which nudging types and mechanisms are successful in specific contexts, future nudges should be tested individually rather than jointly. We need to
attain a better understanding of which types of nudges are best suited to address specific barriers to behaviour change. This is necessary since our findings reveal that the psychological barriers and the nudging mechanisms addressing them do not always match directly, though they may instead function indirectly. The main problem with combined nudging interventions is that they target different aspects of decisions simultaneously, which may lead to incorrect inferences about the mechanisms driving behaviour change and thus prevent repeated nudging success (Hauser et al., 2018).

8.4.3. Incorporating a larger range of target persons and behavioural outcomes

Another task to advance insights on nudging for ESB is to broaden the analysis of target persons and the behavioural outcomes considered in relation to ESG. Research thus far heavily focuses on nudging regular employees to influence recurring decisions with routine-like character, whereby little cognition is involved (Holland et al., 2006). While there is a clear need in the literature on ESB to understand how to target such System 1 types of thought (Sabbir & Taufique, 2022), acting sustainably at work encompasses more than changing habits and routines (Ones & Dilchert, 2012).

Job-specific decisions that employees make to promote the sustainability of products and processes (through the creation, innovation, and adoption of new practices) remain understudied. Future research should pay more attention to ways of nudging leaders and managerial employees, who may decide over high-impact changes in the way of doing business in support of CS (Ones & Dilchert, 2012). Superiors can also have a strong normative influence on subordinates’ ESB (Norton et al., 2015) and nudges could help them to lead by example through their daily actions. In addition, more research is needed on how to nudge prospective employees, who inform the composition of the future workforce with their personal dispositions in support of sustainability (Ones & Dilchert, 2012).

Although our map only considered target persons with existing or prospective employment contracts, research in sustainable HRM increasingly acknowledges the relevance of managing other people, such as sub-contractors or suppliers of organisations (Kramar, 2014). Future studies should thus consider the latter as nudging targets. Knowing how to influence supplier decisions is highly relevant to enhancing the sustainability of transnational business concerns, such as the working conditions in global supply chains of organisations (Schuler & Jackson, 2005).

We also know very little about how to nudge non-task-related, i.e., voluntary, aspects of ESB, specifically organisational citizenship behaviour (Organ, 1997). Evidence is missing on
nudging employees for concerns such as pro-social or environmental lobbying and activism (Girschik et al., 2022). Given that nudges are often perceived as top-down interventions that constrain the agency of the target population, recent research has focused on forms of nudges that involve their targets in the co-design and entail reflection to preserve the autonomy of actors (Banerjee & John, 2021). Such approaches may be suitable to enhance voluntary ESB, by encouraging employees to be proactive and take initiative for ESG concerns. We recommend future research to analyse nudging possibilities in this regard.

8.4.4. Considering a greater diversity of research methods

Finally, our findings reveal a need to widen the research methods used to evaluate nudges in organisations. The predominant focus in our sample on experiments is welcome in ESB research, since it allows testing causality (Norton et al., 2015). Nevertheless, specifically laboratory and survey experiments have limitations. Whereas surveys rely on self-reported rather than actual behaviour, laboratory techniques involve a risk of people behaving differently in the lab than in the field (Beshears & Kosowsky, 2020). Future studies should pay more attention to combining field with laboratory and survey experiments. While the latter can help gain insights on the effect direction of a nudge, complementary field experiments are needed to verify the effect size in practice (Beshears & Kosowsky, 2020).

In addition, we suggest the use of open-ended surveys and interviews as means to verify the psychological roots of focal behaviour prior to intervention design and testing. This is a crucial step to facilitate context-specific intervention refinement and ensure nudging success (Hauser et al., 2018). Surveys and qualitative approaches should also be used more frequently to evaluate nudging acceptance by employees, which may influence nudging effectiveness (Dewies et al., 2021) and enhance the moral permissibility of respective interventions (Hagman et al., 2015). While prior studies report high levels of public support for nudges in diverse countries (Reisch & Sunstein, 2016; Sunstein et al., 2018, 2019), little is known about the nudging acceptance by members of organisations.
8.5. References


8.6. **Appendix A: Detailed description of method and literature scope**

Inspired by Reisch et al. (2021), the methodological approach of our study conforms to the Reporting Standards for Systematic Evidence Synthesis (ROSES, see Appendix B). These standards are provided by the Collaboration for Environmental Evidence (CEE) and suggested for reviewing evidence-based interventions in management and policy (Haddaway et al., 2016). According to the CEE’s (2018) definitions for systematic reviews and maps, our study constitutes a systematic map. Whereas systematic reviews, as defined by the CEE, involve an evaluation of the effectiveness of interventions, systematic maps focus on displaying existing evidence across a broader body of literature to demonstrate the current state of research and identify knowledge gaps in a field of interest (Haddaway et al., 2016). As recommended by the CEE (2018), we drafted and published a research protocol prior to starting our search for literature to ensure maximum transparency and minimise bias of the subsequent screening and coding procedures. We pre-registered our study and published the research protocol on the Open Science Framework6.

**Search**

To gain a better understanding of available studies in our area of interest and the terminology that these studies used, we started with a manual search in 25 academic journals from different disciplines with relevance to our research topic (see Table A1). We focused on management, business ethics, organisational behaviour and human resource management journals that had been included in previous reviews on the micro-foundations of CS (Aguinis & Glavas, 2012; Gond et al., 2017). We further selected behavioural science and policy journals not covered by the bibliographic databases but known by the authors to be hotspots for research on nudging interventions (also see Reisch et al., 2021). Finally, we included a selection of cross-disciplinary journals with high impact factors that are known by the authors to be relevant or had been identified by previous reviews of related research domains (Beshears & Kosowsky, 2020). We manually screened the titles and abstracts of articles published between April 2008 and February 2021 in the chosen journals. April 2008 served as the cut-off date since this is the year when the seminal book *Nudge* was originally published.

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6 See osf.io/3axns.
Based on the results from our manual search, we developed a Boolean search string (see Appendix C) for a subsequent open search conducted in February 2021. The search was performed in the following five databases accessed through the library subscription of Copenhagen Business School: Business Source Complete, PsycINFO, Science Direct, Scopus and Web of Science Core Collection. We selected these databases because they cover articles and conference proceedings across a variety of disciplines (management, business ethics, organisational behaviour, human resource management, behavioural policy) in which relevant studies are likely to be published. As recommended for systematic evidence synthesis (Haddaway et al., 2015), we also searched for additional sources of grey literature in Google Scholar and the ProQuest Dissertation and Theses repository.

Prior to running the full search, we tested and refined the search string by consulting experts with a track record of publishing systematic maps and reviews. For the different data sources, we had to adapt the string slightly. Fig. A1 presents an overview of the different versions that we used. In general, we used String 1 for all sources. If the database rejected String 1, we shortened and altered the syntax, as required. String 2 was applied to the Science Direct database and the theses repository, since these providers set strict limitations for Boolean connectors. String 3 was used for our search in Google Scholar, which cuts the search term after a certain length and does not account for asterisks or wildcards. Hence, only full words were included in String 3. We searched in titles, abstracts, keywords and partly also in full texts, depending on the available features for each of the databases. No date restrictions were applied to this search.

We conducted the Boolean search in English only. This is because publications in other languages usually report their titles and abstracts in English. Subsequently, we retrieved publications with full texts in English, French and German. Studies in other languages were not collected due to language constraints of the authors. Once the search was finalised, we verified whether a benchmark list of articles from our manual search also returned from the databases (see Appendix D). To further broaden our study base, we checked the bibliographies of identified literature reviews (see Appendix G) for supplementary intervention studies. Lastly, a call for evidence was placed on Twitter for additional study recommendations. All the found supplementary studies were added to our search results.
**Screening**

We based our screening process on the workflow proposed by Reisch et al. (2021). After removal of duplicates, the remaining results were screened via a three-stage process at title, abstract and full-text levels. Fig. A2 illustrates the procedure.

Our study inclusion criteria correspond to so-called PICO elements that should be specified in systematic maps (Haddaway et al., 2016). The study population (P) comprises current and prospective employees of all levels. We focus on interventions (I) in the form of nudges (see Table A2) initiated by decision-makers within organisations. Although we do not define a specific comparator (C), eligible intervention studies must compare (i) different treatment/control groups, or (ii) before–after scenarios. The study outcomes (O) refer to behavioural outcomes that support ESG concerns. In line with Reisch et al. (2021), we added a fifth element – framing (F) – to ensure that reported interventions can be attributed to a specific ESG area.

Title screening was conducted in the reference management system Endnote X9. For the screening at abstract level, we used Rayyan Qi, an online screening programme dedicated to systematic reviewing. For the final stage of full-text screening, we retrieved the full articles from databases. When there was doubt about the eligibility, abstracts and full texts were screened by both authors. Appendix F provides a list of excluded full texts with reasons.

To ensure high interrater alignment in screening decisions, we performed consistency checks for a subset of five percent of the identified studies at title, abstract and full-text levels. Any deviations in rating outcomes were discussed between the authors, based on which the inclusion and exclusion criteria were refined. To measure the level of alignment between our decisions, we calculated the Cohen’s Kappa for our screening results from each subsample. We received values ranging from substantial agreement at title level to almost perfect agreement at abstract level to perfect agreement at full-text level (see Appendix D).

**Coding**

We analysed included studies using a coding scheme developed for our research protocol prior to starting the search (see Appendix E). This coding scheme was iteratively refined when screening the articles to ensure that the coding categories adequately reflected all relevant study details. We extracted the study data to an Excel spreadsheet (see Appendix H), where we mapped the descriptive information to our coding categories. In the extraction sheet, each line signifies a
single study, rather than an article which may encompass multiple studies with varying observations. In order to obtain all publicly available information, we also referred to the supplementary files of the articles. If key information was missing, we contacted the study authors for clarification.

**Limitations**

The chosen methodological approach of systematic mapping is not without limitations. Systematic maps are valuable to determine the status of young and widespread research areas because they facilitate the compilation of different study and intervention types across multiple outcomes (James et al., 2016). Nevertheless, due to their descriptive nature, they do not provide a quantitative evaluation of intervention effectiveness. Yet, in practice, effectiveness is a crucial parameter for regulators and managers. A systematic map is thus a helpful starting point to identify the knowledge clusters that are suitable for a subsequent meta-analysis, and to highlight knowledge gaps that require further research before an aggregate evaluation would be meaningful.

Another element that our analysis does not offer is a critical appraisal of each individual study, since this is not expected for systematic maps. Readers who are interested in particular studies can refer to Appendix H, which contains details about each study.

Regarding our search strategy, one limitation relates to the neglect of specialist websites, which are commonly included in systematic maps (James et al., 2016). Unlike behavioural public policy instruments that are promoted through selective expert units, behavioural interventions applied in organisations lack platforms and networks for knowledge sharing. This hindered us in identifying a relevant and manageable number of websites for manual screening purposes.
<table>
<thead>
<tr>
<th>No</th>
<th>Journal</th>
<th>Impact factor</th>
<th>Disciplinary focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Academy of Management Journal</td>
<td>7.571 (2020)</td>
<td>Management</td>
</tr>
<tr>
<td>5</td>
<td>Business and Society</td>
<td>4.074 (2020)</td>
<td>Business Ethics</td>
</tr>
<tr>
<td>7</td>
<td>Business Ethics, the Environment &amp; Responsibility&lt;sup&gt;7&lt;/sup&gt;</td>
<td>1.386 (2015)</td>
<td>Business Ethics</td>
</tr>
<tr>
<td>8</td>
<td>Organizational Behavior &amp; Human Decision Processes</td>
<td>2.304 (2019)</td>
<td>Organisational Behaviour</td>
</tr>
<tr>
<td>15</td>
<td>Behavioural Public Policy</td>
<td>NA</td>
<td>Behavioural Policy</td>
</tr>
<tr>
<td>16</td>
<td>Journal of Behavioral Public Administration</td>
<td>NA</td>
<td>Behavioural Policy</td>
</tr>
<tr>
<td>17</td>
<td>Journal of Behavioral Economics for Policy</td>
<td>NA</td>
<td>Behavioural Policy</td>
</tr>
<tr>
<td>18</td>
<td>Decision</td>
<td>NA</td>
<td>Behavioural Science</td>
</tr>
<tr>
<td>24</td>
<td>Journal of Cleaner Production</td>
<td>7.246 (2019)</td>
<td>Environment</td>
</tr>
</tbody>
</table>

<sup>7</sup> Formerly “Business Ethics: A European Review”
Table A2: Included behavioural intervention types

<table>
<thead>
<tr>
<th>No.</th>
<th>Behavioural intervention</th>
<th>Abbreviation</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Default rules</td>
<td>Defaults</td>
<td>Automatic enrolment in retirement saving programmes</td>
</tr>
<tr>
<td>2</td>
<td>Simplification</td>
<td>Simplification</td>
<td>Provision of simplified information</td>
</tr>
<tr>
<td>3</td>
<td>Use of social norms</td>
<td>Social norms</td>
<td>Emphasising what most people are doing</td>
</tr>
<tr>
<td>4</td>
<td>Increase in ease and convenience</td>
<td>Ease</td>
<td>Making access to healthy food options visible, easy, and convenient</td>
</tr>
<tr>
<td>5</td>
<td>Disclosure</td>
<td>Disclosure</td>
<td>Disclosure of businesses’ safety violations</td>
</tr>
<tr>
<td>6</td>
<td>Warnings</td>
<td>Warnings</td>
<td>Deterrence messages of potential penalties in response to non-compliance</td>
</tr>
<tr>
<td>7</td>
<td>Pre-commitment strategies</td>
<td>Pre-commitment</td>
<td>Asking employees to write down the date they plan to be vaccinated</td>
</tr>
<tr>
<td>8</td>
<td>Reminders</td>
<td>Reminders</td>
<td>Reminding employees to make breaks and move</td>
</tr>
<tr>
<td>9</td>
<td>Eliciting implementation intentions</td>
<td>Intentions</td>
<td>Asking “Do you plan to recycle old paper?”</td>
</tr>
<tr>
<td>10</td>
<td>Informing people of the nature and consequences of their own past choices</td>
<td>Past choices</td>
<td>Disclosing CO₂ emissions of own past driving behaviour</td>
</tr>
<tr>
<td>11</td>
<td>Priming</td>
<td>Priming</td>
<td>Displaying photos of close others at the workplace</td>
</tr>
<tr>
<td>12</td>
<td>Framing</td>
<td>Framing</td>
<td>Explicit incorporation of environmental sustainability in employee communication</td>
</tr>
<tr>
<td>13</td>
<td>Other</td>
<td>Other</td>
<td>Applying other nudges not covered (e.g., urgency statements, salience, etc.)</td>
</tr>
</tbody>
</table>
### Table A3: Identified knowledge clusters and gaps

<table>
<thead>
<tr>
<th>Knowledge clusters</th>
<th>Nb. of studies</th>
<th>Knowledge gaps</th>
<th>Nb. of studies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TARGETS</strong> Target persons</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Employees (e.g., administrative staff)</td>
<td>52</td>
<td>Executives (e.g., CEOs, CFOs)</td>
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<tr>
<td>Managers (e.g., middle managers)</td>
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<td></td>
<td>17</td>
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<tr>
<td>Prospective employees (e.g., job applicants)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BARRIERS</strong> Barriers to behaviour change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System 1</td>
<td>43</td>
<td>System 1</td>
<td>12</td>
</tr>
<tr>
<td>Gender and racial bias</td>
<td>8</td>
<td>Availability heuristic</td>
<td>1</td>
</tr>
<tr>
<td>Habits</td>
<td>9</td>
<td>Loss aversion</td>
<td>4</td>
</tr>
<tr>
<td>Inertia</td>
<td>10</td>
<td>Emotions</td>
<td>1</td>
</tr>
<tr>
<td>Moral unawareness</td>
<td>16</td>
<td>Present bias</td>
<td>5</td>
</tr>
<tr>
<td>Risk aversion</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>System 2</td>
<td>15</td>
<td>System 2</td>
<td>2</td>
</tr>
<tr>
<td>Lack of financial incentives</td>
<td>8</td>
<td>Lack of knowledge</td>
<td>1</td>
</tr>
<tr>
<td>Diffused responsibility</td>
<td>7</td>
<td>Subjective norms</td>
<td>1</td>
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<tr>
<td><strong>MODES</strong> Nudging types</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System 1</td>
<td>8</td>
<td>System 1</td>
<td>0</td>
</tr>
<tr>
<td>Defaults</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ease and convenience</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simplification</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System 2</td>
<td>40</td>
<td>System 2</td>
<td>12</td>
</tr>
<tr>
<td>Social norms</td>
<td>32</td>
<td>Disclosure</td>
<td>4</td>
</tr>
<tr>
<td>Informing about past choices</td>
<td>8</td>
<td>Implementation intentions</td>
<td>3</td>
</tr>
<tr>
<td>Pre-commitment</td>
<td></td>
<td></td>
<td>1</td>
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<tr>
<td>Reminders</td>
<td></td>
<td></td>
<td>4</td>
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<td>Warnings</td>
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<td>0</td>
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<tr>
<td>System 1 or 2</td>
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<td>System 1 or 2</td>
<td>0</td>
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<td></td>
</tr>
<tr>
<td>Priming</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nudging mechanisms</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System 1</td>
<td>14</td>
<td>System 1</td>
<td>8</td>
</tr>
<tr>
<td>Automate decisions</td>
<td>8</td>
<td>Arouse emotions</td>
<td>3</td>
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<tr>
<td>Simplify decisions</td>
<td>6</td>
<td>Harness biases</td>
<td>5</td>
</tr>
<tr>
<td>System 2</td>
<td>40</td>
<td>System 2</td>
<td>9</td>
</tr>
<tr>
<td>Increase accountability</td>
<td>40</td>
<td>Encourage reflection</td>
<td>2</td>
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<td>Prompt planning</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Reminding</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>OUTCOMES</td>
<td>Behavioural outcomes in support of CS</td>
<td>Environmental</td>
<td>Environmental</td>
</tr>
<tr>
<td>----------</td>
<td>--------------------------------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>Energy conservation</td>
<td>Energy conservation</td>
<td>13</td>
<td>Waste reduction</td>
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<td>Cleaner production</td>
<td>Cleaner production</td>
<td>2</td>
<td>Pro-environmental lobbyism/activism</td>
</tr>
<tr>
<td>Pro-environmental lobbyism/activism</td>
<td>Pro-environmental lobbyism/activism</td>
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<td></td>
</tr>
<tr>
<td>Social</td>
<td>Social</td>
<td>33</td>
<td>0</td>
</tr>
<tr>
<td>Diversity &amp; inclusion</td>
<td>Diversity &amp; inclusion</td>
<td>11</td>
<td>Protection of human rights/labour standards</td>
</tr>
<tr>
<td>Employee health</td>
<td>Employee health</td>
<td>10</td>
<td>Pro-social lobbying/activism</td>
</tr>
<tr>
<td>Retirement savings</td>
<td>Retirement savings</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Governance</td>
<td>Governance</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>Integrity</td>
<td>Integrity</td>
<td>8</td>
<td>Board composition</td>
</tr>
<tr>
<td>Risk mitigation</td>
<td>Risk mitigation</td>
<td>8</td>
<td>Stakeholder rights</td>
</tr>
<tr>
<td>Voting procedures</td>
<td>Voting procedures</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
Figure A1: Boolean search string

1. Full Boolean Search String

((nudg* OR “choice architecture” OR debias* OR “behavio$r* interven*” OR “behavio$r* poli*” OR “behavio$r* insight*” OR “behavio$r* economic*” OR “behavio$r* scien*”)
AND
(business* OR firm* OR compan* OR corporat* OR enterprise* OR workplace* OR job* OR employee* OR office* OR leader* OR manager* OR organizations* OR organisations*)
AND
(sustainab* OR responsib* OR environment* OR green OR “climate change” OR pollution OR biodiversity OR energy OR waste OR social* OR health* OR divers* OR “retir* sav*” OR “human rights” OR “labo$r rights” OR complian* OR ethic* OR unethic* OR corrupt* OR moral*))

2. Short Search String

(nudg* AND (firm* OR workplace* OR employee*) AND (sustainab* OR responsib* OR environment* OR social* OR ethical*))

3. Google Scholar Search String

((nudge OR nudging OR debias) AND (business OR firm OR corporate OR workplace OR employee) AND (sustainability OR responsibility OR sustainable OR responsible OR environmental OR green OR social OR compliance OR ethical))

Note: The full Boolean search string is depicted in the format for the Web of Science Core Collection.
Figure A2: Article screening process

Records identified through database searching (n = 6,735)

Articles after duplicates removed (n = 5,681)

Articles after title screening (n = 586)

Articles after abstract screening (n = 114)

Prescreened articles from bibliographic checking (n = 4)

Articles after full text screening (5, bibliographic checking; 32, databases; 4, Google Scholar; 18, manual search) (n = 59)

Records identified through other sources (30, Google Scholar; 34, manual search; 5, PQDT; 1, Twitter call for evidence) (n = 70)

Duplicates before screening (n = 1,124)

Excluded titles (n = 5,095)

Excluded abstracts (n = 472)

Excluded full texts before and while coding, with reasons (5, bibliographic checking; 45, databases; 3, Google Scholar; 10, manual search) (n = 63)

Excluded on:
- No comparator (n = 3)
- No ESG relevant framing (n = 4)
- Wrong intervention (n = 12)
- Other language (n = 1)
- Wrong framing (n = 1)
- Wrong outcome (n = 13)
- Wrong population (n = 17)
- Wrong study design (n = 12)

Articles / studies included for coding and narrative synthesis (n = 51 / n = 70)

Literature reviews included for bibliographic checking and as additional database (1, bibliographic checking; 5, database; 2, Google Scholar) (n = 8)
Figure A3: Number of included articles and studies per academic journal

Note: Identified working papers (n = 2) and conference proceedings (n = 1) are not included in the table.
**Figure A4:** Publications by year

![Graph showing publications by year from 1996 to 2020.](image)

**Figure A5:** Map of the study locations

![Map of study locations worldwide.](image)

*Note:* For studies where the exact location could not be identified, the country coordinates were used for populating the map. The map was created with [EviAtlas](https://eviatlas.org).
References


## 8.7. Appendix B: ROSES checklist for systematic map protocols

<table>
<thead>
<tr>
<th>Section / sub-section</th>
<th>Topic</th>
<th>Description</th>
<th>Further explanation</th>
<th>Checklist / Meta-data</th>
<th>Author response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Title</td>
<td>The title must indicate that it is a systematic map protocol, and must indicate if it is an update/amendment: e.g., &quot;A systematic map update protocol...&quot;.</td>
<td>The title should normally be the same or very similar to the review question.</td>
<td>Meta-data</td>
<td>See Paper 1</td>
</tr>
<tr>
<td>Type of review</td>
<td>Type of review</td>
<td>Select one of the following types of review: systematic map, systematic map update, systematic map amendment</td>
<td>See CEE Guidance on systematic mapping [1], and on amendments and updates [2]</td>
<td>Meta-data</td>
<td>Systematic Map</td>
</tr>
<tr>
<td>Authors contacts</td>
<td>Authors contacts</td>
<td>The full names, institutional addresses, and email addresses for all authors must be provided.</td>
<td></td>
<td>Checklist</td>
<td>Yes</td>
</tr>
<tr>
<td>Abstract</td>
<td>Structured summary</td>
<td>Abstract must not exceed 350 words and must include two sections 1) Background, the context and purpose of the review, including the review question; 2) Methods, how the review will be conducted and the outputs that are expected (specifically mention search strategy, inclusion criteria, critical appraisal, data extraction and synthesis).</td>
<td></td>
<td>Checklist</td>
<td>Yes</td>
</tr>
<tr>
<td>Background</td>
<td>Background</td>
<td>Describe the rationale for the review in the context of what is already known. Protocol must indicate why this study was necessary and what it aims to contribute to the field.</td>
<td>A theory of change and/or conceptual model can be presented that links the intervention or exposure to the outcome.</td>
<td>Checklist</td>
<td>Yes</td>
</tr>
<tr>
<td>Stakeholder engagement</td>
<td>Stakeholder engagement</td>
<td>The planned/actual role of stakeholders throughout the review process (e.g., in the formulation of the question) must be described and explained (using a broad definition of 'stakeholder', including e.g., researchers, funders and other decision-makers; see [3])</td>
<td></td>
<td>Checklist</td>
<td>Yes</td>
</tr>
<tr>
<td>Objective of the review</td>
<td>Objective</td>
<td>Describe the primary question and secondary questions (when applicable).</td>
<td>The primary question is the main question of the review. Secondary questions are usually linked to sources of heterogeneity (effect modifiers).</td>
<td>Checklist</td>
<td>Yes</td>
</tr>
<tr>
<td>Definitions of the question components</td>
<td>Break down and summarise question key elements e.g., population, intervention(s)/exposure(s), comparator(s), and outcome(s).</td>
<td>For other question types see [4,5]</td>
<td></td>
<td>Meta-data</td>
<td>Yes</td>
</tr>
<tr>
<td>Searches</td>
<td>Search strategy</td>
<td>Details regarding search strategy testing should be provided.</td>
<td></td>
<td>Checklist</td>
<td></td>
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<tr>
<td>Search string</td>
<td>Provide Boolean-style full search string and state the platform for which the string is formatted (e.g., Web of Science format)</td>
<td></td>
<td>Meta-data</td>
<td>See Appendix A</td>
<td></td>
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<tr>
<td>Languages – bibliographic databases</td>
<td>List languages to be used in bibliographic database searches.</td>
<td></td>
<td>Meta-data</td>
<td>English, German, French</td>
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<tr>
<td>Languages – grey literature</td>
<td>List languages to be used in organizational websites searches and web-based search engines.</td>
<td>Meta-data</td>
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<tr>
<td>-----------------------------</td>
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<td>Bibliographic databases</td>
<td>Provide the number of bibliographic databases to be searched.</td>
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<td>Web – based search engines</td>
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<td>Meta-data</td>
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<tr>
<td>Organisational websites</td>
<td>Provide the number of organisational websites to be searched.</td>
<td>Meta-data</td>
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<tr>
<td>Estimating the comprehensiveness of the search</td>
<td>Describe the process by which the comprehensiveness of the search strategy was assessed (i.e. list of benchmark articles).</td>
<td>Checklist</td>
<td>Yes</td>
<td></td>
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<tr>
<td>Search update</td>
<td>Describe any plans to update the searches during the conduct of the review.</td>
<td>Optional.</td>
<td>Checklist: No</td>
<td></td>
<td></td>
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<tr>
<td>Article screening and study inclusion criteria</td>
<td>Screening strategy</td>
<td>Describe the methodology for screening articles/studies for relevance/eligibility.</td>
<td>Checklist</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Consistency checking</td>
<td>Describe clearly the process for checking consistency of decisions including the levels at which consistency checking will be undertaken and estimated proportion of articles/studies that will be screened and checked for consistency by two or more reviewers (e.g., Titles (10%), abstracts (10%), full text (10%)).</td>
<td>Checklist</td>
<td>Yes</td>
<td></td>
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</tr>
<tr>
<td>Inclusion criteria</td>
<td>Describe the inclusion criteria used to assess relevance of identified articles/studies. These must be broken down into the question key elements (e.g., relevant subject(s), intervention(s)/exposure(s), comparator(s), outcomes, study design(s)) and any other restrictions (e.g., date ranges or languages).</td>
<td>Checklist</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reasons for exclusion</td>
<td>State that you will provide a list of articles excluded at full text with reasons for exclusion.</td>
<td>Checklist</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical appraisal strategy</td>
<td>Describe here the method you propose for critical appraisal of study validity (including assessment of individual studies and the evidence base as a whole).</td>
<td>Optional</td>
<td>CheckList: No</td>
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<td>Critical appraisal used in synthesis</td>
<td>Describe how the information from critical appraisal will be used in synthesis.</td>
<td>Optional</td>
<td>CheckList: No</td>
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<tr>
<td>Consistency checking</td>
<td>Describe how repeatability of critical appraisal of study validity will be tested.</td>
<td>Optional</td>
<td>CheckList: No</td>
<td></td>
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<tr>
<td>Data extraction</td>
<td>Meta-data extraction and coding strategy</td>
<td>Describe the method for meta-data extraction and coding for studies (potentially providing forms/data sheets (ideally piloted), list if variables to be extracted as meta-data and those that will be coded).</td>
<td>Checklist</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Data synthesis and presentation</td>
<td>Narrative synthesis strategy</td>
<td>Describe methods to be used for narratively synthesising the evidence base in the form of descriptive statistics, tables (including SM database) and figures.</td>
<td>Vote-counting (tallying of studies based on the direction or significance of their findings) must be avoided. May include a summary of the outputs of critical appraisal of the evidence base as a whole (if planned to be performed in SM).</td>
<td>Checklist</td>
<td>Yes</td>
</tr>
<tr>
<td>Knowledge gap and cluster identification strategy</td>
<td></td>
<td>Describe the methods to be used to identify and/or prioritise key knowledge gaps (unrepresented or underrepresented subtopics that warrant further primary research) and knowledge clusters (well-represented subtopics that are amenable to full synthesis via systematic review).</td>
<td></td>
<td>Checklist</td>
<td>Yes</td>
</tr>
<tr>
<td>Demonstrating procedural independence</td>
<td></td>
<td>Describe the role of systematic reviewers (who have also authored articles to be considered within the review) in decisions regarding inclusion or critical appraisal of their own work.</td>
<td>Reviewers who have authored articles to be considered within the review should be prevented from unduly influencing inclusion decisions, for example by delegating tasks appropriately.</td>
<td>Checklist</td>
<td>Yes</td>
</tr>
<tr>
<td>Declarations</td>
<td>Competing interests</td>
<td>Describe of any financial or non-financial competing interests that the review authors may have.</td>
<td></td>
<td>Checklist</td>
<td>Yes</td>
</tr>
</tbody>
</table>

References
8.8. Appendix C: Development of the search string

General

The search string was revised iteratively in order to balance specificity and sensitivity. It was presented to experienced academic researchers with a background in CS as well as to experts in behavioural sciences. It was also checked by scholars with in-depth knowledge on conducting systematic reviews and a record of publishing systematic evidence maps. The additional feedback was implemented and is captured in the below description.

In the beginning, the string was tested in the larger databases relevant for social sciences, including Web of Science Core Collection and Scopus in order to determine how many results the search would return. Finally, the string was tested in all bibliographic databases that were included in the actual search, as well as in Google Scholar and PQDT.

In addition, a benchmarking approach was used to verify if certain references from the manual search were returned by the Boolean search. Through iterative testing, possible restrictions were identified and addressed.

Intervention

The first substring targets the interventions this study is focusing on. Synonyms for behavioural interventions and nudges were identified. In order to avoid a search with too many results, no specific behavioural interventions or nudges were included. Since various behavioural interventions are known by very common names, such as “simplification” or “feedback”, including these terms would have led to a number of search results so high that it would have been impossible to handle. To maintain a balance between specificity and sensitivity of the search, more general synonyms for behavioural interventions were determined. This also helped to avoid bias towards certain interventions. The first search string was then connected with the next one through the Boolean operator "AND".

Population

The second substring refers to the study population. Based on the manual search results, we included the terms that were used most frequently to refer to incumbent and prospective
employees in organisations. We refrained from including "AND" conditions within this second substring, for instance "organisation" AND "business", since this would have restricted the search to a level that would have been too narrow. Again, the second search string was connected with the next one through the Boolean operator "AND".

Outcome

The third substring refers to the outcome of included studies, namely changes in employee behaviour in support of ESG criteria. We based the selection of terms on the results of the manual search to make sure that relevant outcome types were covered.

Further details on the search string

- Use of Boolean operators (""AND"", ""OR"")
- Use of truncations to improve the search and use of wildcards wherever helpful, e.g., for American vs. British spelling
- Elimination of irrelevant repetitions

Benchmark list of relevant articles

The following sample of studies were found in our manual search as well as the Boolean search, which was key for us to verify if the Boolean search string was adequate.

<table>
<thead>
<tr>
<th>Reference</th>
<th>CS area of behavioural intervention</th>
</tr>
</thead>
</table>
8.9. **Appendix D: Consistency checks**

*Title Screening*

At title level, a consistency check between the two authors was conducted for a random sample of 284 articles (284/5679 = 5%). As a measure for consistency of screening choices, the Cohen’s Kappa was calculated. Conflicting cases in the sample were discussed in order to bring the choices for the remaining screening process in closer alignment.

*Cohen’s Kappa: 0.62 (substantial agreement)*

*Abstract Screening*

At abstract level, a consistency check was conducted for a random sample of 58 articles (58/584 = 10%). This led to a level of agreement of 94% or a Cohen’s Kappa of 0.81. Again, conflicting cases were discussed and a common evaluation approach was found in order to better align the screening choices of the remaining abstracts. The Rayyan software, which was used for abstract screening, allows to classify articles with “maybe” in case of uncertainties whether to include them or not. All articles in the remaining population that were classified with “maybe”, were later also assessed by both authors and a common agreement on whether to include them or not was reached.

*Cohen’s Kappa: 0.81 (almost perfect agreement)*

*Title Screening*

Given the high number of the Cohen’s Kappa for the abstract screening, we decided to conduct the consistency check for the full texts for a sample of 5 articles (5/103 = 5%). For this sample, we reached perfect agreement, thus a Cohen’s Kappa of 1. At full text level, we also classified some articles in the remaining population with “maybe”. Again, these articles were subsequently assessed by both authors and a common agreement on whether to include them or not was reached.

*Cohen’s Kappa: 1 (perfect agreement)*
## 8.10. Appendix E: Coding scheme and deviations from the protocol

### Coding Scheme

<table>
<thead>
<tr>
<th>No.</th>
<th>Type of data</th>
<th>Codes</th>
<th>Meta-data/Coding</th>
</tr>
</thead>
<tbody>
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<td>Reference</td>
<td>Authors</td>
<td>Meta-data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Title</td>
<td>Meta-data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Journal</td>
<td>Meta-data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Volume</td>
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<td></td>
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<td>Page numbers</td>
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</tr>
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<td></td>
<td>Year of publication</td>
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<td>Study URL</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Type of publication (e.g., peer-reviewed article, peer-reviewed book chapter, conference proceedings, etc.)</td>
<td>Meta-data</td>
</tr>
<tr>
<td>2</td>
<td>Author contacts</td>
<td>Email</td>
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</tr>
<tr>
<td>3</td>
<td>Basic study characteristics</td>
<td>Geographical location of the study</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Study dates</td>
<td>Meta-data</td>
</tr>
<tr>
<td>4</td>
<td>Study design</td>
<td>Qualitative or quantitative</td>
<td>Meta-data</td>
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<tr>
<td></td>
<td></td>
<td>Main method (e.g., field experiment, laboratory experiment, etc.)</td>
<td>Meta-data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Details of the method (e.g., RCT, DID, interviews, survey)</td>
<td>Meta-data</td>
</tr>
<tr>
<td>5</td>
<td>Population</td>
<td>Population sector (e.g., chemical, logistics, finance, etc.)</td>
<td>Meta-data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sample unit (individuals, departments, organisations)</td>
<td>Meta-data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sample size</td>
<td>Meta-data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Target persons (executives, managers, employees, job applicants)</td>
<td>Meta-data</td>
</tr>
<tr>
<td>6</td>
<td>Intervention</td>
<td>Addressed barrier to behaviour change</td>
<td>Meta-data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intervention mechanism</td>
<td>Meta-data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intervention type</td>
<td>1) defaults, 2) simplification, 3) social norms (a) peer effects, b) moral appeal, 4) ease, 5) disclosure, 6) warnings, 7) pre-commitment, 8) reminders, 9) intentions, 10) past choices, 11) priming, 12) framing, 13) choice architecture, 14) other</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of intervention types</td>
<td>Meta-data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intervention description</td>
<td>Meta-data</td>
</tr>
<tr>
<td>7</td>
<td>Comparator</td>
<td>Details on the comparator (number of treatment and control groups etc.)</td>
<td>Meta-data</td>
</tr>
</tbody>
</table>
### Deviations from the research protocol

Several deviations from the initial research protocol aroused as our study progressed. First, we limited our sample to studies that concerned nudging interventions implemented by decision-makers within organisations. Whereas initially, we also sought to include interventions implemented by external regulators targeting business organisations, we refrained from this approach since these studies address a different academic literature, focusing on the macro- and meso-levels of organisational dynamics. Narrowing our focus to internal management approaches, we extended our manual search to specific organisational behaviour and human resource management journals that were not included in the initial list of journals for our manual search.

Second, several minor deviations concerned the coding scheme. The main reason for these deviations is that we iteratively refined the coding scheme during the article screening process to ensure that the coding categories adequately reflected all relevant study details. All deviations are listed below:

- We renamed our initial CS outcome category from “ethical” to “governance”. We refrained from calling the category “ethical”, since “ethical”, in our understanding, refers to a broader concept that can also inform environmental and social areas of interest. Moreover,
by following the well-known reporting approach according to ESG criteria we provide a practically relevant mapping.

- We added a subcategory “financial risk mitigation” to the outcome area of governance interventions. Studies in this subcategory investigated how to improve the accuracy of reported financial expenses in the corporate context.
- Since the intervention category social norms was by far the largest and most diverse category, we added new subcategories, namely peer effects and moral appeal in the coding sheet.
- We refined our original category “behavioural biases” to include a broader selection of behavioural causes that eligible intervention studies aimed to address, thus naming it “barriers to behaviour change”.
- We included an additional category “population sector” to specify the sector, in which the study populations operated.
- Our initial coding scheme proposed that we would include “details on the intervention (pre-test, treatment groups, duration, replication, etc.).” While we collected details on the intervention (e.g., comparator, sample size, duration), we did not gather data on pre-test, treatment groups, and replication.
- We added a category to verify whether the studies accounted for nudging acceptance. If so, we also collected the respective findings.
# Appendix F: Excluded articles with reasons

<table>
<thead>
<tr>
<th>Nb.</th>
<th>Source</th>
<th>Title</th>
<th>Reason for exclusion</th>
<th>Authors</th>
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<th>Journal</th>
<th>Volume</th>
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<tbody>
<tr>
<td>1</td>
<td>Database</td>
<td>A computerized lifestyle application to promote multiple health behaviours at the workplace: Testing its behavioural and psychological effects</td>
<td>Wrong intervention</td>
<td>Lippke, S., Fleig, L., Wiedemann, A. U., Schwarzer, R.</td>
<td>2015</td>
<td>Journal of Medical Internet Research</td>
<td>17</td>
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<td>3</td>
<td>Database</td>
<td>Active choice, implicit defaults, and the incentive to choose</td>
<td>Wrong intervention, no ESG relevant framing</td>
<td>Beshears, J., Choi, J. J., Laibson, D., Madrian, B. C.</td>
<td>2019</td>
<td>Organizational Behavior and Human Decision Processes</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Database</td>
<td>An integrative, systematic review exploring the research, effectiveness, adoption, implementation, and maintenance of interventions to reduce sedentary behaviour in office workers</td>
<td>Wrong intervention</td>
<td>MacDonald, B., Janssen, X., Kirk, A., Patience, M., Gibson, A.-M.</td>
<td>2018</td>
<td>International Journal of Environmental Research and Public Health</td>
<td>15</td>
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<tr>
<td>6</td>
<td>Database</td>
<td>Behavioral public HR: Experimental evidence on cognitive biases and debiasing interventions</td>
<td>Wrong intervention, no ESG relevant framing</td>
<td>Cantarelli, P., Belle, N., Belardinelli, P.</td>
<td>2020</td>
<td>Review of Public Personnel Administration</td>
<td>40</td>
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<tr>
<td>7</td>
<td>Database</td>
<td>Behavioral study of personalized automated demand response in the workplace</td>
<td>Wrong intervention</td>
<td>Takanori, I., Motegi, N., Ushitufu, Y.</td>
<td>2019</td>
<td>Energy Policy</td>
<td>132</td>
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<td>8</td>
<td>Database</td>
<td>Behavioural framework for managing conflicts of interest in professional accounting firms</td>
<td>No comparator for interventions</td>
<td>Ishaque, M., Rexford, A., Yusuf, F.</td>
<td>2021</td>
<td>British Journal of Management</td>
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<td>9</td>
<td>Database</td>
<td>Behavioural insights on business taxation: Evidence from two natural field experiments</td>
<td>Wrong population</td>
<td>Biddle, N., Fels, K., Sinning, M.</td>
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<td>Type</td>
<td>Authors</td>
<td>Year</td>
<td>Journal/Journal Volume/ISSN</td>
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<td>11</td>
<td>Google Scholar</td>
<td>Closing America's retirement savings gap: Nudging small business owners to adopt workplace retirement plans</td>
<td>No comparator</td>
<td>Kirtland, P. W.</td>
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<td>Combining web-based gamification and physical nudges with an app (MoveMore) to promote walking breaks and reduce sedentary behavior of office workers: Field study</td>
<td>Wrong outcome</td>
<td>Mamede, A., Noordzij, G., Jongerling, J., Snijders, M., Schop-Etman, A., Denktas, S.</td>
<td>2021</td>
<td>J Med Internet Res</td>
<td>23</td>
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<td>13</td>
<td>Database</td>
<td>Debiasing the halo effect in audit decision: evidence from experimental study</td>
<td>Wrong intervention</td>
<td>Utami, I., Kusuma, I. W., Gudono, G., Supriyadi, S.</td>
<td>2017</td>
<td>Asian Review of Accounting</td>
<td>25</td>
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<td>14</td>
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<td>Deciding to invest responsibly: Choice architecture and demographics in an incentivised retirement savings experiment</td>
<td>Wrong study design</td>
<td>Hoffmann, R., Cam, M.-A., Camilleri, A. R.</td>
<td>2019</td>
<td>Journal of Behavioral and Experimental Economics</td>
<td>80</td>
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<td>15</td>
<td>Database</td>
<td>Decreasing bouts of prolonged sitting among office workers</td>
<td>Wrong study design</td>
<td>Green, N., Sigurdsson, S., Wilder, D. A.</td>
<td>2016</td>
<td>Journal of Applied Behavior Analysis</td>
<td>49</td>
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<td>16</td>
<td>Database</td>
<td>Does revealing personality data affect prosocial behaviour?</td>
<td>Wrong outcome</td>
<td>Drouvelis, Michalis, Georgantzis, Nikolaos</td>
<td>2019</td>
<td>Journal of Economic Behavior and Organization</td>
<td>159</td>
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<td>19</td>
<td>Bibliographic checking</td>
<td>Effectiveness of offering healthy labelled meals in improving the nutritional quality of lunch meals eaten in a worksite canteen</td>
<td>Wrong framing</td>
<td>Lassen, A. D., Beck, A., Leedo E., et al.</td>
<td>2014</td>
<td>Appetite</td>
<td>75</td>
</tr>
<tr>
<td>Page</td>
<td>Type</td>
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<td>Authors</td>
<td>Journal</td>
<td>Year</td>
<td>Volume</td>
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<tr>
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<td>Ethics management for the construction industry: A review of ethical decision-making literature</td>
<td>Wrong intervention</td>
<td>Ho, C. M. F.</td>
<td>Engineering Construction &amp; Architectural Management</td>
<td>2011</td>
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<td>24</td>
<td>Database</td>
<td>Impact of peer comparisons and firm heterogeneity on nonpoint source water pollution: An experimental study</td>
<td>Wrong population</td>
<td>Wu, S., Palm-Forster, L. H., Messer, K. D.</td>
<td>Resource and Energy Economics</td>
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<td>27</td>
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<td>Making energy metrics relevant to service firms: from energy conservation to energy productivity</td>
<td>Wrong study design</td>
<td>Raggio, R. D., Ekman, P., Thompson, S. M.</td>
<td>Journal of Cleaner Production</td>
<td>2020</td>
<td>256</td>
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<td>28</td>
<td>Database</td>
<td>Nudge for justice: An ERP investigation of default effects on trade-offs between equity and efficiency</td>
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### 8.12. Appendix G: Identified literature reviews

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<td>Energy use, behavioral change, and business organizations: Reviewing recent findings and proposing a future research agenda</td>
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### 8.13. Appendix H: Included articles and studies

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Excel file with detailed coding information per included study available upon request from the authors
Contextual Barriers to Ethical Behaviour in Organisations: What Role for Nudging?

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Abstract

Encouraging ethical behaviour in organisations remains an ongoing challenge. This article examines how the application of nudging in ethics and compliance management can help address this challenge through subtle alterations in the decision-making environment while preserving choice. I focus on uncertainty, anonymity, and injustice as three prevalent barriers the workplace context can bring to ethical decision-making. I revisit the long-standing discussion on compliance-and values-oriented ethics management, explaining the shortcomings of prevailing compliance practices and delineating values-oriented conditions to effectively address uncertain, anonymous, and unjust situations. On this basis, I assign different ethics nudges to the identified contextual barriers and critically evaluate their potential to work against these barriers. This paper argues that nudges can be welcome complements to ethics and compliance management when they are implemented in awareness-raising and transparent ways. However, due to their limited effectiveness and scope, nudges cannot be the sole solution to enhancing ethics in the workplace. I discuss the implications of my arguments for management practice and policy and provide directions for future research.

Keywords

Nudging, ethics and compliance management, ethical behaviour, moral awareness, values orientation, workplace context
9.1. Introduction

Organisations continue to struggle with the challenge of successfully encouraging ethical behaviour among employees (De Cremer & Vandekerckhove, 2017; Goebel & Weißenberger, 2017). This challenge is particularly evident considering the widespread prevalence of daily ethical lapses, ranging from neglecting data privacy to implicit discrimination (Kaptein, 2010). These seemingly independent transgressions can collectively have harmful consequences, undermining stakeholder trust and negatively shaping organisational norms (Feldman, 2019). The shortcomings of conventional ethics and compliance (E&C) management approaches to address these violations call for a reassessment of the foundations of ethical employee behaviour and the means to foster it (Feldman & Kaplan, 2021).

Ethical behaviour can be understood as behaviour that is “morally acceptable to the larger community” (Jones, 1991, p. 367). The behavioural ethics literature has long stressed the relevance of values orientation, enhancing a sense of shared values within the organisational climate to successfully encourage ethical conduct (Paine, 1994; Weaver & Treviño, 1999; Zhang et al., 2014). Yet, the proposed solutions to E&C management still heavily involve compliance, aimed at preventing, detecting, and punishing ethical violations rather than fostering an environment that encourages ethical conduct (Coglianese & Nash, 2021; Jannat et al., 2021). While compliance is a necessary element of any ethical control system, the sole focus on discipline falls short of addressing many everyday transgressions (Feldman, 2019).

Recognising the role of the workplace context is critical to improve the success of E&C management (Goebel & Weißenberger, 2017). Unethical behaviour most frequently arises in situations that allow individuals to neglect, minimise, or justify the ethical implications of their behaviour (Bazerman & Sezer, 2016). Compliance schemes can exacerbate such focusing failures or ethical blind spots (Bazerman & Tenbrunsel, 2011). By steering attention to discipline, enforcement can undermine people’s moral awareness and raise the risk of misconduct in areas it cannot sufficiently reach (Tenbrunsel & Messick, 1999).

As an alternative approach to fostering ethical decision-making in the workplace nudging has recently sparked attention (Desai & Kouchaki, 2015, 2017; Feldman & Kaplan, 2021). Nudges are small alterations in the decision environment that guide behaviour “without forbidding any options or significantly changing their economic incentives” (Thaler & Sunstein, 2008, p. 6).

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8 Conversely, unethical behaviour entails being “morally unacceptable to the larger community” (Jones, 1991, p. 367).
Various nudges, such as moral reminders, pledges, and social norms, have been suggested as means to promote ethical conduct (Hertwig & Mazar, 2022). One advantage is their context-oriented application. Since nudges are integrated into the immediate choice environment, they can convey ethical cues at critical decision points (Feldman & Kaplan, 2021), potentially raising employees’ moral awareness and encouraging ethical deliberation (Rest, 1986). Moreover, by preserving choice, nudges may uphold employees’ intrinsic motivation for ethical decision-making (Desai & Kouchaki, 2017). Finally, their general ease of implementation enhances their appeal in terms of cost-efficiency (Benartzi et al., 2017).

However, the use of nudging in the workplace also entails concerns. First, while ethics nudges have been mainly studied in controlled laboratory settings (Hertwig & Mazar, 2022), available evidence on their effectiveness in real-life contexts is limited and inconclusive (Martuza et al., 2022). The success of nudges may thus be questioned within the complexities of actual workplace situations, where aspects absent in isolated laboratories, such as interpersonal relationships and leadership styles, influence behaviour (Hauser et al., 2017). Second, like compliance, nudges target specific behavioural incidents that are easy to observe and predict (Feldman & Kaplan, 2021). Their scope of influence may, therefore, be limited in workplace situations that cannot be predetermined. Third, implementing nudging in the workplace raises ethical considerations regarding the transparency of respective interventions. Due to their subtle modes of influence, nudges may not always be apparent as management interventions (Rozeboom, 2023; Ruehle, 2023), which can constrain employees’ autonomy and adversely affect their ethical conduct (Friedland et al., 2023).

Considering the outlined opportunities and limitations, this article critically examines the application of ethics nudging in organisations. It synthesises insights from nudging studies and behavioural ethics scholarship to answer the following research question: How can nudging be applied in E&C management to encourage ethical behaviour in the workplace?

I explore this question concerning three prominent situational characteristics that can act as barriers to ethical decision-making in organisations: (1) uncertainty, resulting from conflicting norms or unclear principles (Schweitzer & Hsee, 2002), (2) anonymity, resulting from social distance and lacking visibility (Moore & Gino, 2013), and (3) injustice, resulting from inequitable social relationships (Ambrose et al., 2002). Each of these barriers offers opportunities for individuals to neglect or justify the moral consequences of their behaviour (Rees et al., 2019), evoking ethical blind spots (Bazerman & Tenbrunsel, 2011). I portray the limitations of compliance interventions to address these barriers and tease out values-oriented conditions under
which ethics management can better tackle uncertainty, anonymity, and injustice. On this ground, the article assigns different ethics nudges to the focal barriers, critically assesses their potential in restraining these barriers, and offers recommendations for their improved implementation.

This paper argues that viewing nudges as the sole solution to E&C management is unwarranted, given their probable constraints in complex workplace situations. However, if nudges are designed to raise employees’ moral awareness and applied transparently, they may serve as valuable complements to E&C measures, such as training, workshops, and leadership communication. When integrated with these interventions, nudges could better compensate for their own limitations, potentially increasing their effectiveness and scope. Jointly with other initiatives, nudges could foster an ethical climate in which shared values are apparent (Newman et al., 2017), enabling individuals to recognise and address ethical issues beyond specific incidents.

Practically, this article offers guidance for assessing the applicability of nudges to encourage ethical decision-making in different workplace situations. It provides a balanced perspective on nudging and its implications for E&C management, helping to understand both its opportunities and limitations. From a scholarly viewpoint, this paper suggests the relevance of studying the use of nudges as complements to other ethics interventions with the overall objective of fostering values orientation across the organisation.

In the following, I briefly discuss E&C programmes and their common elements. Next, I introduce my arguments about compliance- and values-oriented ethics management in uncertain, anonymous, and unjust contexts. I continue to assess the role of ethics nudges in these situations and provide suggestions for their improved implementation. I end with a summary of implications for management practice and policy and propose directions for future research.

### 9.2. Ethics and compliance programmes

Most organisations have ethics and compliance programmes in place that consist of “a set of activities, policies and procedures intended to support employees to understand and comply with the ethical standards and policies set by the organisation” (Park & Blenkinsopp, 2013, p. 521). The most fundamental element of an E&C programme is a code of ethics (Jannat et al., 2021; Stöber, Kotzian & Weißenberger, 2019). It defines values that characterise ethical behaviour, such as honesty, fairness, integrity, and respect, including anti-corruption, bribery, whistleblowing, workplace safety, and non-discrimination (Tenbrunsel et al., 2003). By emphasising a company’s
ethical ideals, a code of ethics is presumed to translate organisational values into employees' moral standards and behaviour (Stöber et al., 2019).

Ethics guidelines and training frequently complement codes of conduct, clarifying the codes’ moral principles and specifying their application to different areas of organisational practice (Kaptein, 2015). Ethics support and counselling services are other common elements of E&C programmes intended to provide employees with a contact point when facing ethical dilemmas (Jannat et al., 2021). E&C programmes typically entail monitoring systems through auditing, performance appraisal, or reporting procedures to detect unethical behaviour (Tenbrunsel et al., 2003). Finally, sanctioning mechanisms serve to encourage ethical behaviour through rewards and punishments concerning aspects such as job security, promotions, salaries, and bonus payments (Tenbrunsel et al., 2003).

E&C programmes “can be implemented with varying degrees of emphasis on shared values and/or compliance” (Weaver & Treviño, 1999, p. 327). Values-oriented programmes focusing on ethical guidance and support have proved particularly relevant to ensuring employee commitment to ethics. However, even though most employees support the principles communicated by values-oriented interventions (Weaver & Treviño, 1999), their actual behaviour often deviates from there, and empirical evidence for the effectiveness of soft instruments, such as ethics codes and training, is limited (Bazerman & Tenbrunsel, 2011, Zhang et al., 2014). This inconsistency drives managers to focus on compliance, emphasising rules, monitoring, and sanctioning (Kaptein, 2010).

9.3. Contextual barriers to ethical behaviour: The limitations of compliance orientation

The frequent divergence of people’s behaviour from their endorsed values is linked to the phenomenon of bounded ethicality. It arises when cognitive constraints impede individuals from fully considering the ethical implications of their actions (Chugh et al., 2005). These cognitive constraints strongly depend on people’s choice environment. The decision context influences the way a “decision is framed at the time of action” (Rees et al., 2019, p. 29). Contextual factors direct individual attention to aspects of a problem that are particularly salient while permitting the neglect or trivialisation of other aspects (Palazzo et al., 2013). Thereby, they can evoke ethical blind spots in decision-making (Bazerman & Tenbrunsel, 2011). When the ethical implications of a decision are not part of the adopted frame, they will not be considered, even if people value

Numerous contextual factors can evoke ethical blind spots (Rees et al., 2019). This paper focuses on uncertainty, anonymity, and injustice based on previous reviews and frameworks, highlighting them as three of the most frequently discussed contextual characteristics that can act as barriers to ethical decision-making (Ayal et al., 2015; Greenberg & Colquitt, 2005; Moore & Gino, 2013; Rees et al. 2019). Before delving into a detailed explanation of their mechanisms, I will describe the overarching tension that arises when managers respond to uncertainty, anonymity, and injustice with compliance orientation.

The premise of compliance-oriented interventions rests on the idea that compliant employees behave ethically, in line with moral standards defined by their organisations (Weaver & Treviño, 1999). However, even though employees may adhere to installed rules, their behaviour may deviate from shared values beyond these regulations (Feldman & Kaplan, 2021). The inherent mechanism of compliance makes people less likely to consider the ethical implications of a decision they are facing. Employees may be so focused on discipline that they may overlook ethical issues that matter in the same situation (Desai & Kouchaki, 2015; Tenbrunsel & Messick, 1999). As such, compliance may hinder the adoption of an ethical decision frame in which people are morally aware and able to recognise the ethically right thing to do (Tenbrunsel & Smith-Crowe, 2008). Instead, they may adopt a business decision frame, referring to a calculative mindset through which individuals approach a situation as one that warrants attention to punishments and rewards (Tenbrunsel & Messick, 1999), which can lead to unintended outcomes, as misconduct may increase in areas that compliance cannot sufficiently reach.

Efforts to encourage ethical behaviour through compliance orientation may thus evoke a ‘waterbed effect’, whereby addressing one problem intensifies the same problem in another area (Wijen, 2014). This dynamic is associated with a well-examined tension on the macro level linked to the phenomenon of organisational decoupling (Bromley & Powell, 2012; Meyer & Rowan, 1977). Scholars distinguish between policy-practice decoupling, whereby organisations fail to implement the policies they have formally embraced (MacLean & Behnam, 2010; Weaver et al., 1999), and means-ends decoupling, where organisations substantively comply with specific standards but fail to achieve their overarching goals (Bromley & Powell, 2012; Wijen, 2014). Compliance inducement, meant to tackle policy-practice decoupling, can aggravate means-ends decoupling by constraining organisations’ flexibility to address envisioned policy objectives in complex institutional contexts (Wijen, 2014).
My evaluation points to a similar tension on the micro level between compliance-oriented management practices and the goal of encouraging ethical behaviour in uncertain, anonymous, and unjust workplace situations. Compliance interventions, intended to minimise disparities between people’s behaviour and their embraced values, may hinder ethical decision-making within the complexities of actual workplace situations. I proceed by assessing the implications of this dynamic for environments marked by uncertainty, anonymity, and injustice, respectively.

### 9.3.1. Uncertainty and compliance orientation

Uncertainty refers to situations in which behavioural norms are ambiguous or unclear (Schweitzer & Hsee, 2002). It results from organisational complexity, where multiple stakeholders with diverging interests interact (Treviño, 1986). Formal principles of ethical conduct may be vague or in conflict with informal systems encompassing the beliefs and practices of leaders and peers (Feldman & Kaplan, 2021; Scharding & Warren, 2022). Consequently, the line between right and wrong can easily blur (Warren, 2019). Resulting grey areas allow people to neglect or justify their own ethical violations (Shalvi et al., 2015). They may also bias people towards egocentrism, whereby self-interested perceptions reduce the salience of ethical considerations so that unethical behaviour easily proliferates (Rees et al., 2019).

Uncertain situations require clarity (Kaptein, 2008), which rules can offer for specific concerns, outlining what is allowed and forbidden (Kaptein, 2015). Yet, these rules may be too narrow to substantively address the problem of uncertainty by providing guidance on shared values in the wider workplace context. Rigid instructions can restrain the scope of perceived responsibility, thereby suppressing reflection about ethical concerns (Messick, 1999; Michael, 2006). Hence, they may hinder the adoption of an ethical decision frame under which people are morally aware and sensitive to ethical dilemmas (Tenbrunsel & Smith-Crowe, 2008). This approach can backfire since no rule covers all possible decisions.

Corporate cybersecurity exemplifies an uncertain context where rules of ethical conduct are prone to miss the mark. Employees must maintain confidentiality and integrity when using information systems (Yazdanmeh et al., 2023). However, the inherent uncertainty of the dynamic and rapidly evolving digital landscape can lead to moral unawareness. To reduce arising human errors, organisations commonly establish stringent rules for utilising digital assets (Yazdanmeh et al., 2023). For example, to prevent phishing attacks, many organisations define statements such as “Do not trust emails that come from people you do not know” (Renaud et al., p. 1). This precise
instruction can facilitate compliance. However, even if employees are compliant, data breaches may prevail. Nowadays, it is quite common to receive phishing emails from regular correspondents. Rigidly following a rule may thereby do more harm than good. Recipients may be so focused on compliance that they fail to realise any need for caution with emails from known contacts (Renaud et al., 2021). Consequently, they may engage in data breaches without recognising the inherent ethical implications. Compliance-oriented means may thus fall short of their envisioned ends by limiting employees’ reflection about legitimate actions.

9.3.2. Anonymity and compliance orientation

Anonymity is another contextual barrier frequently present in complex organisations (Jones, 1984). It refers to situations where highly differentiated structures and processes hinder information sharing and reduce observability (Moore & Gino, 2013). Anonymity leads to perceptions of not being seen and identified, which can reduce individual concern for social evaluation and felt responsibility (Diener et al., 1976; Festinger, 1954; Zimbardo, 1969). It may distance people from their peers (Hoffman et al., 1996) and restrain attention to themselves (Trope & Liberman, 2010). This increased self-focus can lead to unconsciously prioritising material outcomes at the expense of moral concerns, with unethical behaviour as a possible outcome (Rees et al., 2019).

To reduce anonymity, past research emphasises the relevance of visibility (Ayal et al., 2015), which compliance-oriented surveillance can increase for specific decisions (Kaptein, 2015). Yet, the sole focus on detection may not adequately address the cognitive mechanism underlying anonymity and its implications in the wider decision environment. Stringent monitoring improves compliance by acting as a deterrent in predictable domains due to the heightened potential of exposing behaviour (Jannat et al., 2021). However, the inherent focus on detection fails to increase people’s moral awareness. Conversely, it suggests to individuals that they cannot be trusted, which may crowd out their intrinsic motivation for ethical reflection (Weaver & Treviño, 1999). People may adopt a business frame instead of an ethical decision frame, weighing off the benefits of rule violation against the likelihood of getting caught (Tenbrunsel & Messick, 1999). This dynamic can backfire in those domains where misconduct is hard to foresee and detect.

A recent study by Warren (2019) points to the adverse effects of monitoring. The author observed trading crowds in financial exchanges, which had imposed surveillance schemes to prevent socially harmful behaviour. The measure effectively deterred physical aggression, which
was easy to monitor and detect. However, other socially harmful actions, such as harassment and ostracism, slipped through the monitoring intervention. Employees continued to feel socially distant and unobserved when engaging in less visible violations. Under the lens of a business decision, they may have regarded the committed violations as minor compared to stringently monitored concerns, thereby failing to realise the harm caused by their actions (Warren, 2019). In essence, the example illustrates the constraints of compliance interventions in substantively addressing anonymity. As surveillance can undermine moral awareness, its application can lead to outcomes that contradict its objectives.

9.3.3. Injustice and compliance orientation

The third contextual barrier this article considers is injustice, which relates to situations of inequitable social relationships (Adams, 1965). It is another characteristic of complex organisations encompassing various actors and processes (Bunderson, 2001). Injustice implies that employees feel treated unfairly (Ambrose et al., 2002). It can manifest in three types: distributive injustice, involving unfair decision-making outcomes like insufficient pay (Adams, 1965); procedural injustice, involving unfair decision-making procedures, such as limited opportunities for self-expression (Thibaut & Walker, 1975); and interactional injustice, concerning unfair interpersonal treatment from management, such as being ignored or disrespected (Bies & Moag, 1986). When people feel treated unfairly, their moral awareness diminishes (Rees et al., 2019). They may be so focused on restoring justice that they become blind to the morality of their own actions, likely resulting in unethical behaviour (Gino & Pierce, 2010).

Organisations typically introduce sanctions in response to associated misconduct (Kaptein, 2015). Applying discipline may raise procedural justice, signalling to employees that the organisation follows through on ethical failures (Treviño & Weaver, 2001). Implementing sanctions can further address distributive justice through appropriate rewards and punishments for specific actions (Treviño & Weaver, 2001). Yet, the sole focus on discipline may not suffice to substantively reduce organisational injustice and its implications for ethical decision-making. Sanctions can enhance compliance through their deterrent mechanism (Jannat et al., 2021). However, evoking self-interested calculations can cause harm in areas that escape the grasp of discipline (Tenbrunsel & Messick, 1999).

A common example of how sanctioning misses its objectives is handling employee theft (Johnson et al., 2022). Employee theft can arise as a reaction to specific unjust occasions, such as
pay cuts (Greenberg, 1990), as well as more general assessments of organisational injustice (Treviño & Weaver, 2001). If E&C programmes merely serve as window dressing, those employees who behave ethically may feel treated disrespectfully by the organisation’s failure to uphold ethical standards and retaliate (Treviño & Weaver, 2001). Resulting theft can manifest in different forms, such as stealing office or inventory supplies, inflating personal expense reports, or taking extended personal time (Gross-Schaefer et al., 2000). Organisations commonly respond to these incidents with sanctions. They adapt compensation policies, offer staff discounts, or introduce punishment to make stealing less attractive (Gross-Schaefer et al., 2000; Johnson et al., 2022; Niehoff & Paul, 2000). Mastercard, for example, affirmed success in employee theft reduction by imposing fines and terminating contracts. However, this hard-line approach promoted a culture of fear, thereby reducing the ethical behaviour of honest people (Gross-Schaefer et al., 2000). Again, the example shows how compliance-oriented means can decouple from their envisioned ends.

9.4. **Addressing contextual barriers through values orientation: Managerial implications for ethics nudging**

This paper reiterates calls from prior research to move beyond compliance- towards values-orientated ethics management to reduce means-ends decoupling and tackle the contextual barriers that uncertainty, anonymity, and injustice pose to ethical decision-making (Paine, 1994; Weaver & Treviño, 1999). Values-oriented programmes prioritise enabling ethical conduct over preventing misconduct (Paine, 1994). Their core aim is to foster a sense of shared values in the workplace context, letting people feel that they are guided, seen, and supported, thereby increasing moral awareness and encouraging ethical behaviour (Weaver & Treviño, 1999).

Values orientation strongly relates to the cultivation of an ethical climate (Newman et al., 2017), which refers to shared perceptions of organisational members about “what constitutes right behaviour” and arises when they “believe that certain forms of ethical reasoning or behaviour are expected standards or norms for decision-making within the firm” (Martin & Cullen, 2006, p. 177). Ethical climates encompass formal systems, referring to documented policies, and informal systems, involving interpersonal relationships. Both systems must be aligned to convey consistent messages about shared values (Tenbrunsel et al., 2003; Treviño, 1990).
The significance of values orientation within organisational climates to enhance ethical behaviour is widely acknowledged (Newman et al., 2017). However, a persistent challenge lies in effectively attaining this objective through adequate management practices (Goebel & Weißenberger, 2017; Guerci et al., 2015). Compliance interventions remain important (Paine, 1994; Weaver & Treviño, 1999), especially for addressing serious intentional violations. Yet, other measures may be necessary to tackle more ordinary ethical breaches stemming from inadvertence or negligence (Feldman & Kaplan, 2021; Peer & Feldman, 2021). Soft instruments such as codes of conduct and training play a crucial role in familiarising employees with shared values (Treviño & Nelson, 2021). However, these interventions occur detached from employees’ daily interactions and may thus fail to defuse ethical blind spots amid the complexities of actual workplace situations. Adequate interventions should go beyond formal systems and leverage the influence of informal systems on ethical decision-making to effectively raise employees’ moral awareness in uncertain, anonymous, and unjust contexts. Since informal systems are more closely linked to employees’ experience in organisations (Tenbrunsel et al., 2003; Treviño, 1990), they can impact employee behaviour more strongly (Goebel & Weißenberger, 2017).

As context-oriented interventions, nudges hold the potential to highlight shared values through formal and informal systems within the immediate choice environment. By tweaking subtle contextual features, they could defuse ethical blind spots and raise employees’ moral awareness at critical decision points (Feldman & Kaplan, 2021). Thus, although nudges are often portrayed as reactive behavioural interventions that exploit unconscious thinking (Friedland, 2023), they may also foster ethical reflection. In this regard, it is vital to differentiate between nudges and their distinct mechanisms (Hauser et al., 2018). Some, such as defaults that preselect options, bypass conscious reasoning, while others, such as reminders that provide timely information, can stimulate reflection (Sunstein, 2015). Nudges like reminders could raise employees’ moral awareness and encourage ethical deliberation (Ayal et al., 2015). Moreover, by reinforcing beliefs about shared values (Hertwig & Mazar, 2022), they may support the cultivation of an ethical climate.

The choice-preserving attribute of nudges unveils another possibility when stimulating ethical decision-making. Since people can decide against a nudged direction (Thaler & Sunstein, 2008), nudges may overcome the limitations of compliance schemes, which discourage ethical reflection by forcing people into a specific action (Messick, 1999; Michael, 2006). Finally, compared to compliance, nudges are typically simpler and cheaper to implement, making them...
an attractive policy tool, even if their impact may be moderate in absolute terms (Benartzi et al., 2017).

However, despite the presented benefits, ethics nudging incurs limitations, especially in real work situations. Precisely because nudges rely on small and subtle alterations (Thaler & Sunstein, 2008), they may not be strong enough to tackle major contextual barriers in organisations. Thus far, ethics nudges have been mostly tested in isolated laboratory settings (Hertwig & Mazar, 2022), and their positive outcomes have not always been replicated, particularly in the field where multiple contextual factors interfere (Martuza et al., 2022).

Another concern about implementing nudges in E&C management is their focus on predictable decisions (Thaler & Sunstein, 2008). In addressing predetermined patterns, nudges may fail to foster ethical behaviour outside their specified treatment area, like compliance interventions. In the worst-case scenario, they may even have a moral crowding-out effect, similar to discipline, by reducing people’s propensity for ethical reflection (Friedland, 2023), which raises doubts about their impact on the wider ethical climate beyond a specific incident.

Finally, some ethics nudges may themselves be ethically questionable. This critique applies especially to interventions like defaults that bypass conscious reasoning. People may not recognise that they are being nudged, which may constrain their autonomy of reasoning (Friedland, 2023; Rozeboom, 2023; Ruehle, 2023). Using untransparent nudges may backfire once employees learn about these interventions, potentially eroding trust (Baldwin, 2014) and impairing ethical accountability (Weaver & Treviño, 1999). It is important to note that this article only considers awareness-raising nudges. Most of these interventions are educative, informing people transparently (Sunstein, 2015). However, certain nudges, like moral symbols, subtly foster people’s moral awareness (Desai & Kouchaki, 2017) without them necessarily noticing. These nudges may be more controversial on ethical grounds and potentially manipulative (Rozeboom, 2023; Ruehle, 2023).

Apart from nudges’ choice-preserving and low-cost application, their possibilities as managerial ethics interventions seem ambiguous and call for a more nuanced case-by-case assessment. The subsequent evaluation focuses on nudges in uncertain, anonymous, and unjust contexts, respectively. Table 1 provides a framework of nudging interventions linked to uncertainty, anonymity, and injustice, as explored in the following sections.
<table>
<thead>
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<th>Contextual Barrier</th>
<th>Compliance orientation</th>
<th>Values orientation</th>
<th>Nudge</th>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Suggestions</th>
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<td><strong>Uncertainty</strong></td>
<td><strong>Rules</strong></td>
<td><strong>Morality cues</strong></td>
<td><strong>Moral reminders</strong></td>
<td>• Target critical decision points • Transparent</td>
<td>• Inconclusive effects • Specific scope</td>
<td>• Ensure that nudges emphasise values over compliance</td>
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<tr>
<td>Conflicting or unclear norms blur the line between right and wrong</td>
<td>Increase clarity but undermine moral awareness by commanding actions</td>
<td>Increase the salience of morality in the choice environment</td>
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<tr>
<td><strong>Anonymity</strong></td>
<td><strong>Surveillance</strong></td>
<td><strong>Social identity cues</strong></td>
<td>Watching eye pictures</td>
<td>• Wide scope</td>
<td>• Imply surveillance • Inconclusive effects • Non-transparent</td>
<td>• Combine and integrate nudges with other ethics measures to foster social identity aligned with shared values</td>
</tr>
<tr>
<td>Feelings of being unobserved increase egocentrism and reduce ethical accountability</td>
<td>Increase transparency but undermine moral awareness by signaling mistrust</td>
<td>Raise the weight individuals place on others’ welfare and decrease the prominence of self-interest</td>
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<tr>
<td><strong>Injustice</strong></td>
<td><strong>Sanctions</strong></td>
<td><strong>Supportability cues</strong></td>
<td>Thank-you messages</td>
<td>• Target critical decision points • Transparent</td>
<td>• Inconclusive effects • Specific scope</td>
<td>• Integrate nudges with other ethics measures to strengthen a sense of support aligned with shared values</td>
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9.4.1. Addressing uncertainty

In uncertain contexts where vague or conflicting norms may blur the moral path (Scharting & Warren, 2022; Schweitzer & Hsee, 2002), enhancing the salience of ethical criteria is crucial (Ayal et al., 2015). Instead of rules that focus on specific obligations, morality cues delivered by formal and informal systems are needed to help people recall their moral commitment (Goebel & Weißenberger, 2017). The increased salience of morality can enable employees to recognise the ethical implications of their decisions, thereby empowering them to make choices that align with shared values (Weaver & Treviño, 1999).

To ensure that morality cues can effectively raise the moral awareness of people in uncertain situations, they must be salient at critical decision points (Ayal et al., 2015). For instance, one key problem in cybersecurity is that values-oriented guidance is often disconnected from employees’ daily choices. Even though companies may have policies emphasising the importance of handling data with confidentiality and integrity, employees may be too busy with their everyday tasks to account for these principles (Li et al., 2019).

Nudges like moral reminders can prompt people to remember their moral commitment at specific decision junctures (Mazar et al., 2008; Zhao et al., 2019) and might, therefore, reduce uncertainty in these instances. For example, before employees click on software downloads, digital nudges could remind employees about data confidentiality and integrity (Sharma et al., 2021). Emphasising shared values just before a specific action may raise employees’ moral awareness at the right time, encouraging ethical decision-making in an anticipated situation.

Reminders are educative nudges whose purpose seems clear to people (Sunstein, 2015). They strongly relate to behavioural interventions known as boosts, which strive to “foster people’s competence to make their own choices” (Hertwig & Grüne-Yanoff, 2017, p. 473). Like boosts, educative nudges “inform people so that they can make better choices for themselves” (Sunstein, 2015, p. 427). These nudges may help people make reflective ethical decisions by highlighting shared values. However, reminders also have a downside: targeting a specific behaviour may narrow people’s moral awareness to only that behaviour which may limit their impact beyond the anticipated incident to uncertain contexts where ethical dilemmas are harder to anticipate. Relatedly, reminders may risk unexpected side effects if they emphasise compliance over values (Hertwig & Mazar, 2022). For example, a common nudge installed in emails from external senders is a warning to be cautious with links and attachments (Lelewski, 2019). This warning reiterates the rule not to trust external senders. By steering attention to this specific obligation, the
nudge, just like discipline, may undermine awareness of other cyber risks, such as fake emails from known contacts (Renaud et al., 2021).

Another issue is how well reminders can influence behaviour in uncertain workplace situations after all. While these nudges have proved successful in laboratory experiments (Hertwig & Mazar, 2022), recent evidence points to their limited effects in the field (Martuza et al., 2022). Hence, even the timeliest reminder may not suffice to address uncertain workplace situations where conflicting norms conveyed by informal systems are powerful (Scharding & Warren, 2022). Immoral practices of peers may override a subtle morality cue so that uncertainty would persist.

Applying social norm messages emerges as another useful nudging strategy in uncertain contexts to leverage the power of informal systems. These nudges emphasise what others do or approve (Thaler & Sunstein, 2008), thereby harnessing the influence of social conventions on people’s behaviour (Cialdini et al., 1991). An example of a social norm nudge is a poster in the office informing that 90% of employees use strong passwords to enhance their cybersecurity (Subramanian, 2021). By highlighting the morally exemplary actions of peers, these nudges may increase the salience of morality within informal systems.

Like reminders, social norms are educative nudges that provide transparent information (Sunstein, 2015). People should recognise the managerial intentions behind these interventions and resist their guidance if they wish. Yet, again, these nudges address a specific behavioural pattern that must be predetermined. Their scope of influence may be limited beyond the anticipated action. Moreover, the effectiveness of social norm nudges may strongly depend on how firmly norms are anchored in the workplace. Recent evidence points to the failure of these nudges in changing norms (Dimant et al., 2020) and enhancing honesty in the field (Martuza et al., 2022). If norm nudges are too weak to counteract the norms enshrined in informal systems, they may fail to reduce uncertainty in the workplace.

A third category of nudges potentially useful in addressing uncertain situations comprises moral symbols. For example, Desai & Kouchaki (2017) showed that religious figures exposed by employees can enhance the ethical behaviour of peers. They can prompt assumptions about the moral character of the displayers, thereby increasing their colleagues’ moral awareness. These nudges installed in offices could be especially useful to emphasise morality more generally without targeting specific issues. However, due to their subtle influence, their effects in the workplace may be limited, especially since people may get used to their permanent presence (Ayal et al., 2015). Furthermore, moral symbols can be interpreted as priming interventions whose
effects are not necessarily obvious to people (Hertwig & Mazar, 2022), which can evoke critique that they are manipulative and infringing on autonomy (Rozeboom, 2023; Ruehle, 2023).

Overall, the above evaluation points to various concerns about the use of nudges to encourage ethical behaviour in uncertain workplace situations. While nudges can make morality more salient in specific instances, their implementation requires careful consideration to help overcome their limitations in effectiveness, scope, and transparency. First, it becomes clear that nudges must emphasise values over compliance. When nudging employees towards specific ethical decisions, managers must account for the wider implications of corresponding interventions. To avoid the risk of employees relying blindly on the guidance of nudges (Friedland, 2023), these interventions must be designed to stimulate ethical reflection (Hartwig & Reuter, 2021). By emphasising values, nudges may raise employees’ moral awareness in a predetermined situation and support the cultivation of an ethical climate, which impacts ethical behaviour more broadly.

Second, nudges should be combined with other ethics measures to increase their effectiveness and scope. Regular training in uncertain contexts like cybersecurity remains paramount to foster employees’ knowledge and skills regarding evolving cyber risks (He & Zhang, 2019). Instead of viewing nudges as isolated interventions, they could be applied alongside training, serving as cues to action towards completing the latest training module (Li et al., 2019). Furthermore, next to formal ethics systems, leaders play a crucial role in providing ethical guidance in the workplace (Treviño & Brown, 2004). They must act as role models and expose norms that align with shared values, including adequate communication with employees (Treviño & Brown, 2004). Nudges may be useful additions to reinforce moral messages from management. For example, a signature from leadership under the formal code of conduct could serve as a nudge to increase employee commitment to ethical principles (Stöber et al., 2019).

Finally, given the ethical controversies around workplace nudges that are non-transparent, it is vital to inform employees about these interventions sufficiently (Rozeboom, 2023; Ruehle, 2023). This demand aligns with the concept of Nudge Plus, which advocates for a more informed nudging process (Banerjee & John, 2021). Nudge Plus can be implemented in two ways: as an educative nudge that inherently informs people or a noneducative nudge that is complemented with information provision (Banerjee & John, 2021). Since nudges like moral symbols are non-educative, they should be combined with information to ensure employees can recognise them. Promoting employee autonomy is another way to foster ethical reflection (Friedland, 2023), thereby potentially enhancing ethical behaviour in uncertain contexts. For example, recent
evidence suggests that hybrid nudges, designed to help their recipients understand why they are nudged, are more successful in modifying cybersecurity habits (Zimmermann & Renaud, 2021).

9.4.2. Addressing anonymity

In anonymous situations, where perceived social distance dilutes moral awareness (Moore & Gino, 2013), there is a need for interventions that foster social identity. Rather than conveying mistrust through monitoring, ethics interventions should sensitise people to the presence of others and let them feel that they are seen and identified as part of the organisation (Weaver & Treviño, 1999). According to social identity theory, a sense of belongingness increases adherence to social standards in the reference category (Tajfel & Turner, 1985). Hence, when employees identify with their organisations, aligning with shared values becomes more likely (Carmeli et al., 2017). The heightened sense of connection may increase concern for the welfare of others and decrease self-interest (Tenbrunsel et al., 2003). It may promote the adoption of an ethical frame (Tenbrunsel & Smith-Crowe, 2008), enabling people to reflect and act on what they consider morally right.

Effectively curbing anonymity and increasing moral awareness necessitates bolstering members' social identity throughout the organisation and preventing an ‘us-versus-them’ dynamic, which can arise when distinct social identities form in different subunits (Ashforth & Mael, 1989; Billig & Tajfel, 1973). In contexts with strong subgroup identities, unethical behaviour like discrimination and bullying may persist against outsiders, especially when aggressive norms prevail (Escartin et al., 2013). Individuals will only endorse an organisation’s shared values if they perceive commitment to these principles within their reference group (Ashforth & Mael, 1989). Managers must thus strive to integrate shared values into social interactions across the workplace (Carmeli et al., 2017).

As nudges to curb anonymity and enhance ethical accountability, posters of watching eyes are prominent (Ay al et al., 2015; Dear et al., 2019; Hertwig & Mazar, 2022). They rest on the idea that people are so responsive to the perception of being observed that even an image of vigilant eyes can promote ethical behaviour (Bateson et al., 2006). However, their replication has led to mixed results (Dear et al., 2019), and eye cues have failed to work in crowded real-life settings (Ay al et al., 2021). A subtle eye picture may thus not suffice to counteract anonymity in complex work situations, where self-interested goals can easily overshadow ethical concerns. The implementation of watching eyes raises additional ethical questions about the very nature of these interventions. First, an eye poster may heighten employees’ attention to social expectations
without them realising it is a management practice (Rozeboom, 2023). This raises recurring issues regarding individuals’ autonomy and ability to hold managers accountable for nudges (Rozeboom, 2023; Ruehle, 2023). Second, rather than promoting social identity, pictures of eyes might convey mistrust by implying surveillance (Dear et al., 2019). Thus, similar to monitoring, their mechanism may rely on deterrence, prompting people to comply with specific rules based on self-interested calculations (Tenbrunsel & Messick, 1999). The risk of unethical conduct could increase when employees realise that these nudges lack enforcement.

Other nudges, relying on personal interactions, may be better suited to foster social identity and effectively reduce anonymity. In that respect, peer observation is a common nudging intervention (Bolton et al., 2021), for example, by creating shared offices (Pascual-Ezama et al., 2015). Co-working arrangements could nudge various ethical decisions occurring in the workplace every day. Indeed, Pascual-Ezama et al. (2015) found that completing a job in the presence of peers increases people’s honesty when most colleagues act in alignment with formal principles. However, the opposite applied when the norms conveyed by peers contradicted the formally communicated ones. The example shows how social cues can work in two directions, depending on the norms the reference category conveys (Reicher et al., 1995). Returning to Warren’s (2019) case of trading crowds, traders worked on a common sales floor. However, since informal norms conflicted with formal policies, a shared workspace seemed inadequate in fostering an ethical identity. Moreover, whether employees would understand the link between peer observation and management’s intent to encourage ethical behaviour is questionable. Unless this objective is clearly communicated, promoting visibility might undermine trust, posing a danger to ethical reflection (Bolton et al., 2021).

An alternative nudging intervention, potentially suited to foster employees’ social identity in a more targeted manner, involves showcasing photographs of family and friends (Hardin et al., 2020). By re-establishing connections with honest and trustworthy relationships, these photos can remind employees of their shared moral principles and discourage misconduct, such as financial transgression (Hardin et al., 2020). Using photographs of meaningful relationships seems promising to strengthen social identity in a way that reinforces values orientation, thereby influencing a range of employee decisions. Its implementation would be transparent as it necessitates managers to actively encourage the display of photos. However, due to their subtle influence, there remains doubt regarding their effectiveness when used in isolation.

One final nudging practice worth considering to reduce workplace anonymity is using solidarity messages. These nudges can foster social identity by emphasising the relevance of
mutual support among group members (Branas-Garza, 2006). For example, in insurance claims, solidarity messages clarifying the collective benefits of insurance have been tested to reduce fraud (Martuza et al., 2022). Similar messages could be applied in the workplace to underscore a sense of community between employees, thereby addressing aspects such as equality and inclusion. By implicitly referring to shared values, they could influence a wide range of ethical decisions. Moreover, as these messages come from management, their purpose should be obvious. Yet, again, they may not be effective on their own, which is particularly relevant given that solidarity messages have shown null effects in other practical applications (Martuza et al., 2022).

In summary, numerous nudges could help foster employees’ social identity in anonymous contexts. However, when used in isolation, these nudges likely encompass weaknesses in their effectiveness, scope, and transparency. To address these limitations, this paper primarily recommends integrating nudges into wider E&C approaches. Small interventions can play an important role in strengthening social identity and fostering ethical behaviour by acting as the ‘glue’ that binds various elements of an ethical climate (Carmeli et al., 2017). However, to have a substantial impact on employee conduct, it is crucial to thoughtfully implement and integrate various of these activities. They must be applied so that shared values become truly embedded in professional interactions and deeply rooted in the organisational climate. For example, to increase the positive influence of nudges involving peer observation, they could be combined with social norm messages (Bolton et al., 2021). This approach would strengthen social identity by reinforcing shared values and guiding individuals towards a preferred direction. Other useful measures involve highlighting ethical role models. Sharing the stories of exemplary employees may increase identification with these employees and raise others’ motivation to act comparably (Carmeli et al., 2017). Nudging interventions could complement these initiatives by displaying photos of diverse and inclusive role models in office hallways (Bohnet, 2016).

A critical prerequisite for successfully applying nudges in anonymous workplace contexts remains to resolve any ethical concerns associated with these nudges. Considering the controversies regarding the transparency and intrusiveness of watching eye nudges (Rozeboom, 2023), I would advise against their utilisation in organisations. Their potential to infringe on personal autonomy outweighs their benefits. However, other nudges, such as peer observation, could be useful when combined with additional initiatives to foster employee social identity and ethical conduct. Moreover, in line with Nudge Plus (Banerjee & John, 2021), one could actively involve employees in intervention development, further strengthening participants' sense of identity (Carmeli et al., 2017). For instance, the Dutch Bank ING employs workshops to co-create
nudges like an interactive email signature, reminding employees from diverse teams of their shared identity (Scholten et al., 2022). Additionally, this inclusive strategy leverages employees’ insights about a context they know best, potentially solving the challenge of predicting anonymous situations.

9.4.3. Addressing injustice

In unjust contexts where employees feel that they are treated unfairly (Ambrose et al., 2002), it is crucial to strengthen perceived organisational support, a principle known as the virtue of supportability (Kaptein, 2008). Perceived organisational support implies to employees that their organisation “values their contributions and cares for their wellbeing” (Eisenberger et al., 1986, p. 500). Instead of focusing on discipline, possibly suggesting to individuals that they are ethically incompetent, managers should encourage employees to pursue their own moral aspirations (Weaver & Treviño, 1999). According to social exchange theory (Homans, 1958), if employees feel that their organisation supports them, they will show commitment to the organisation’s ethical principles in return (Tenbrunsel et al., 2003; Weaver & Treviño, 1999).

Perceived organisational support closely relates to interactional justice that centres around personal relationships (Ambrose & Schminke, 2003). Emphasising interactional justice could compensate for the negative effects of distributive or procedural injustice in the workplace (Cropanzano et al., 2007). For instance, Greenberg (1990) identified the relevance of transparent communication of employee pay cuts. By clearly explaining the reasons behind these reductions, managers could foster a sense of support among their workforce, thereby mitigating the risk of theft.

Nudges can be valuable tools to convey cues of support within employees’ immediate choice environments. One example is a message, such as “thank you for being honest” communicated before undertaking a specific task (Pruckner & Sausgruber, 2013, p. 666). This statement may imply to employees that their organisation values and trusts them, thereby encouraging honest and trustworthy behaviour in return (Peer & Feldman, 2021). Thank-you messages are educative nudges that are transparent (Hertwig & Mazar, 2022) and evident as tools of managerial influence (Rozeboom, 2023). However, like reminders, they have a limitation regarding their scope of influence. Their success relies on targeting specific ethical decisions that must be predictable. Moreover, even in a predetermined situation, whether a subtle thank-you note can effectively counteract injustice is questionable. Imagine an office supply room with a sign on the wall stating
“thank you for being honest”, intended to discourage employees from taking stationary home. This message may enhance ethical behaviour in an organisation where few concerns about injustice prevail. However, a subtle supportability cue would probably not suffice to tackle major issues of unfairness embedded in the organisational climate (Greenberg & Colquitt, 2005).

Alternative nudging strategies may be better suited to address unjust workplace situations by harnessing the influence of informal systems. Examples include digital nudges incorporated in office messaging systems, prompting managers to acknowledge their employees’ efforts or celebrate team achievements (Batram, 2023). As these nudges build on managers to determine the most appropriate compliments for each context, they could address a broad spectrum of decisions. Empirical evidence supports the benefits of such simple acts of interpersonal appreciation. For instance, a recent laboratory experiment demonstrated that performing small acts of kindness encouraged recipients to exhibit kindness in return (Kumar & Epley, 2022). Nevertheless, the effectiveness of digital appreciation prompts may be doubted in unjust workplace situations. While these nudges could be useful aids for managers dedicated to equitable leadership, they could backfire if managers did not genuinely embrace a commitment to fair leadership. Employees may feel suspicious and react unethically when leaders, who tend to disrespect them, suddenly start complimenting them. Another downside of digital appreciation nudges is their indirect structure. Prompts encouraging managers to acknowledge their team members do not directly target these individuals. Consequently, employees may not recognise the nudge behind their managers’ feedback. Discovering the intervention later could erode their trust (Baldwin, 2014) and undermine perceived support (Weaver & Treviño, 1999).

It becomes clear that nudges alone cannot tackle unjust workplace situations. Leadership is crucial in addressing injustice by fostering a sense of support within the organisational climate (Brown & Treviño, 2006; Tan et al., 2019). Leaders should demonstrate commitment to values by being honest, trustworthy, and fair and showing that they care about their employees (Tan et al., 2019). Nudges cannot change personal characteristics (Beshears & Gino, 2015) and must be complemented with measures like leadership development programmes that target individual competence (Treviño & Nelson, 2021). Moreover, transparent leadership communication is crucial to ensure employees feel valued and supported (Tan et al., 2019). Likewise, initiatives like confidential staff helplines are needed to give employees a voice (Tomlinson & Greenberg, 2007). Finally, the fair administration of employee pay is critical for workplace justice (Cropanzano et al., 2007). Only if nudges are part of this wider intervention pool, they may successfully reinforce
perceptions of support within targeted decision situations and contribute to cultivating an ethical climate.

Furthermore, given the critical link between transparency and perceptions of support (Liu & Berry, 2013; Tan et al., 2019), keeping employees sufficiently informed about nudges, such as digital appreciation prompts, is vital. One could further enhance their clarity by actively involving employees in their development, which would also increase procedural justice (Tomlinson & Greenberg, 2007). Moreover, by signalling to employees that their contributions are valued and supported this inclusive strategy could serve as a foundation for an ethical climate (Weaver & Treviño, 1999). These suggestions reiterate the relevance of adopting Nudge Plus (Banerjee & John, 2021), focusing on strengthening employee reflection on shared values.

9.5. Conclusion and directions for future research

Despite an expanding body of research on ethical behaviour, encouraging ethical conduct in organisations remains an ongoing challenge. This paper discussed the role that nudging could play in E&C management as a values-oriented approach to raise employees’ moral awareness and foster their ethical behaviour within the complexities of actual workplace situations. The discussion focused on uncertainty, anonymity, and injustice as key contextual barriers to ethical decision-making. Revisiting prior research, I highlighted the limitations of compliance interventions and outlined values-oriented conditions to tackle these barriers effectively. I then mapped diverse ethics nudges to uncertain, anonymous, and unjust situations and critically assessed their potential to address them. My conceptual evaluation offers tailored guidance for managers and organisational policymakers, suggesting the most appropriate ethics nudges for distinct workplace contexts. I highlight issues that require caution when implementing these interventions and provide recommendations to improve their application.

This article concludes that the success of nudges in promoting ethical behaviour depends on various factors, such as employees’ ethical knowledge and skills, leadership’s demonstration of shared values, and the alignment of organisational goals and norms. In real-world settings, no intervention exists in isolation (Zhang et al., 2014). Therefore, accounting for the wider workplace context is vital when implementing nudges in organisations. Nudges should foster employees’ moral awareness and operate in alignment with other interventions that emphasise shared values.
to leverage their positive influence. Moreover, transparent nudging execution is crucial to avoid unintended side effects.

For managers and organisational policymakers keen on implementing ethics nudging, a practical first step could involve assembling experts from diverse corporate units, such as human resources, compliance, communication, and strategy. This team could identify areas where nudges could complement existing E&C programmes. Given their context-oriented application, nudges are ideally suited for tackling specific behavioural issues. However, organisational choice architects should simultaneously consider nudges’ wider implications on employee perceptions and beliefs. They should design them to align with cultivating an ethical climate by emphasising shared values.

9.5.1. Directions for future research

This paper suggests multiple avenues for future research. First, more evidence is needed on the impact of ethics nudges in the field. Since organisational contexts and their encompassed norms and structures vary (Hauser et al., 2017; Zhang et al., 2014), we must better understand how nudging effects differ between organisations. Likewise, we should deepen our knowledge of the circumstances in which nudges have unintended consequences to mitigate negative outcomes on ethical behaviour. Furthermore, there is a need to test the long-term effects of nudges, given that people can adjust to these interventions through frequent and repeated exposure (Ayal et al., 2015). Similarly, assessing behavioural outcomes after intervention removal is important, as behaviour change might not persist (Zhang et al., 2014).

Another avenue of research involves examining the influence of nudges on organisational climates. This paper argued that nudges could support cultivating an ethical climate besides addressing specific decisions. This presumption holds particular relevance for awareness-raising nudges, like the ones discussed, as they influence conscious perceptions and beliefs (Hertwig & Mazar, 2022), which, in turn, define the ethical climate (Newman et al., 2017). Furthermore, nudges could indirectly affect organisational climates by altering behaviour. Over time, these behavioural changes could translate into workplace norms (Foster, 2017) that shape the organisational climate in the long term (Martin & Cullen, 2006). However, with few exceptions (Stöber et al., 2019), there is a lack of studies investigating these relationships. This persistent research gap could relate to notable design challenges. Measuring ethical climates relies on aggregating individual normative perceptions (Martin & Cullen, 2006). Since nudges target
specific decisions, it may be difficult to measure this aggregate impact. Nevertheless, even specific insights on selected perceptions and beliefs may contribute valuable knowledge regarding a microfacet of the organisational climate.

Furthermore, empirical research is required to investigate the optimal composition of E&C programmes. Despite the importance of values-oriented practices, some decisions necessitate compliance interventions. Especially severe ethical transgressions like systematic tax evasion, often planned and executed regardless of moral considerations (Zhang et al., 2014), cannot be curbed by nudges or an ethical climate. If penalty is the only deterrent, strict monitoring and sanctioning are essential. Future research should pinpoint those decisions that necessitate compliance interventions. Likewise, we must deepen our understanding of which values-oriented interventions best target distinct ethical decision-making aspects. Nudges appear particularly suited to highlight shared values in the immediate choice environment, targeting situations that demand prompt action. Conversely, other decisions may depend more strongly on long-term competence development through mentoring and coaching (Friedland, 2023). Additional evidence is necessary to fine-tune the combination of interventions most suitable for each aspect of ethical decision-making.

Finally, this paper focused on uncertainty, anonymity, and injustice as three of the most frequently discussed contextual factors that hinder ethical behaviour (Ayal et al., 2015; Rees et al., 2019). However, the selection of these factors is not all-embracing. Other contextual characteristics like power and competition could equally pose barriers to ethical decision-making (Rees et al., 2019). Future research should assess the use of nudges in tackling these barriers. Moreover, it would be interesting to study potential interactions between contextual factors and the combination of nudges, alongside other interventions, to address these factors.
9.6. References


Sustainable Behaviour at Work: How Message Framing Encourages Employees to Choose Electric Vehicles

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Abstract

This paper explores the application of message framing as a management practice to promote change in employee behaviour for corporate sustainability. We conduct a field experiment in a German automotive company to test the effects of three different frames (emotional, normative, and gain) on pro-environmental actions in relation to electric vehicle choices of 170 employees. The frames are applied via two communication channels: first via emails to remind employees about ordering a new car and second via pop-up notifications appearing in the online system where employees complete their orders. We find that the interventions applied in emails, but not in pop-up notifications, have significant positive effects on electric vehicle adoption. Yet, the durability of these effects is limited. Overall, gain framing in the form of cost saving information has the longest and most powerful impact on electric car choices. Our findings have implications for workplaces where employees might not yet possess strong pro-environmental beliefs, showing that employee sustainable behaviour can be enhanced by emphasising complementary gain motives.

Keywords

Message framing, nudging, corporate sustainability, employee sustainable behaviour, workplace interventions, electric vehicles
10.1. Introduction

As the impacts of climate change and environmental degradation mount, firms face growing pressure from stakeholders to adopt sustainable business practices (Howard-Grenville et al., 2014). They increasingly implement corporate sustainability (CS) strategies to integrate social and environmental considerations alongside economic performance goals (Rasche et al., 2017). However, after establishing sustainability targets and policies, organisations face the challenge of encouraging employees to align their behaviour with overriding strategies (Pellegrini et al., 2018; Sabbir & Taufique, 2022; Temminck et al., 2015; Uddin et al., 2021; Young et al., 2015). Prior research showed that receptive employee responses are relevant to improving a company's environmental performance in the long-term (del Brío et al., 2007; Paillé et al., 2014).

Employee sustainable behaviour (ESB) refers to responsible workplace actions in various domains that enhance positive organisational outcomes for society and the environment (Pellegrini et al., 2018). Internal management practices are key to fostering ESB “by shaping employees' perceptions of organisational commitment to sustainability and expected behaviour in the workplace” (Pellegrini et al., 2018, p. 1229). Whereas the literature acknowledges the relevance of workplace interventions for promoting ESB, studies that empirically test the same relationship are limited (Paillé et al., 2014; Raineri & Paillé, 2016). Moreover, existing evidence showed that conventional management practices, such as training and awareness campaigns, have had little effects on ESB (Pellegrini et al., 2018; Young et al., 2015).

In light of these shortcomings, the present study suggests the application of message framing as a novel management practice to encourage the sustainable behaviour of employees. Message framing involves the alternative presentation of information in specific terms to mobilise certain beliefs and motivations that influence the choice of action either automatically or deliberately (Levin et al., 1998; Lindenberg, 2001). From a behavioural science viewpoint, framing can be seen as a form of nudging that relies on modifications in the choice environment to “alter people's behaviour in a predictable way, without forbidding any options or significantly changing their economic incentives” (Thaler & Sunstein, 2021, p. 8). Because of their frequent success in public policy domains (Kaiser et al., 2020; Reisch et al., 2021), nudges are gaining increasing attention as potential levers to shift the behaviour of employees (Beshears & Gino, 2015; Ebert & Freibichler, 2017; Foster, 2017; Ilieva & Drakulevski, 2018). Yet, despite the growing interest in nudges as organisational management tools, far more field research is needed on which types of nudges work best in this domain (Chapman et al., 2021). Nudging includes the area of message
framing, which frequently addresses green consumer choices (Chang et al., 2015). However, there is a lack of research on how the same approach can influence pro-environmental decisions of employees.

We want to address this gap and focus our analysis on the automotive industry and the transition to electric mobility. The transportation sector accounts for 24% of global energy-related CO₂ emissions (International Energy Agency [IEA], 2021), and car companies face rising pressure to move their business focus to electric vehicles (EVs) as less environmentally harmful mobility alternatives due to reduced tailpipe emissions (Beak et al., 2020; Held et al., 2018; Wolff et al., 2020). The mobility transition requires the promotion of internal organisational change to gain employees' support for EVs. Ensuring that employees practise what their employers preach, and thus engage in ESB by driving EVs, is crucial for promoting a culture of ‘walking the talk’. Otherwise, there is also a risk of employees becoming cynical about their organisations, which might, in the worst case, result in resistance to change (Brown & Cregan, 2008). People working in an automotive company are car experts with detailed technical knowledge and strong emotional attachment to vehicles. As their skills traditionally evolve around fuel engines (Held et al., 2018), they might identify with internal combustion engine vehicles (ICEVs) and thus be reluctant to make the shift to EVs. Prior research revealed that multiple motives are responsible for changes in environmental behaviour, which can be emphasised through different frames (Lindenberg & Steg, 2007). We seek to explore this topic by asking the following research question: How should message frames be formulated and applied to effectively promote the EV adoption of employees?

To answer our research question, we conducted a field experiment within a sports vehicle company in Germany, namely Porsche, to test the effects of three different frames on employees' adoption of EVs as their company or leasing cars. In line with the regulatory environment in Germany, we consider both battery EVs (BEVs) and plug-in hybrid EVs (PHEVs) as EVs (BMWK, 2022). The first frame seeks to trigger an affective reaction through the association of EVs with Porsche as a brand with strong emotional value. The second frame conveys a normative goal, calling on employees to contribute to a sustainable Porsche future. The third frame focuses on monetary gains, providing cost saving information associated with EVs. Employees received the message frames via two different communication channels during the decision process of ordering a car: first via emails to remind them about the upcoming order and second via pop-up notifications, appearing in the online system where employees completed their vehicle orders.

The remainder of this paper is structured as follows. Section 2 presents the theoretical background on the application of message framing to promote ESB. Section 3 describes our
methodology. Section 4 presents the results. Section 5 discusses theoretical and practical implications of our findings. Section 6 reflects on limitations and suggests areas for future research.

10.2. Literature review

10.2.1. Management practices for ESB

Internal organisational management practices with environmental or social objectives are described to promote ESB by fostering employees' commitment to sustainability (Aguilera et al., 2007). They can influence corporate culture\(^9\), which represents the shared values, beliefs, and norms supported by employees within an organisation (Schein, 2010). Changes in organisational culture are seen as necessary to align individual with organisational aspirations in favour of sustainability (Renwick et al., 2013). Once environmental values and norms are internalised by employees, they are assumed to translate into green behaviour (Afsar et al., 2018). The most prominent organisational practices applied to promote ESB are skills development and training (Renwick et al., 2013). Whereas such measures signal commitment and might help strengthen CS expertise and knowledge (Paillé et al., 2014), there is little evidence that they effectively change employees' workplace actions (Pellegrini et al., 2018; Young et al., 2015).

One reason for the limited effectiveness of conventional organisational management tools relates to their neglect of the psychology of human decision making (Bazerman & Tenbrunsel, 2011). Behavioural decision research showed that people engage in two types of processes when making decisions - System 1 and 2 processes.\(^{10}\) Whereas the former is characterised as fast, intuitive, and often emotional with little cognitive effort involved, the latter is described as slow, reflective, and analytical with effortful mental activities dominating (Kahneman, 2012). The prevailing type of thinking depends on the context, with many day-to-day decisions in busy work environments primarily relying on System 1 processes (Beshears & Gino, 2015). This also applies to ESB, especially when employees perform task-related pro-environmental actions (Sabbir & Taufique, 2022), that is, decisions they make as part of their routine jobs and roles (Bissing-Olson et al., 2012). It is important to note that when engaging in System 1 reasoning, people often do not recall the messages conveyed by reward systems and training that are typically detached from

\(^9\) Within the scope of this dissertation, the words “culture” and “climate” are used as synonyms.

\(^{10}\) These are also described as cognitive and non-cognitive determinants of ESB (Sabbir & Taufique, 2022).
the moments of actual choices (Bazerman & Tenbrunsel, 2011). This limitation raises a need for interventions that encourage desirable behaviour by connecting the stimuli and the actual choices as closely as possible, through changes in the context in which decisions are made (Beshears & Gino, 2015; Thaler & Sunstein, 2021).

10.2.2. Message framing as a management practice for ESB

One type of intervention that works through alterations in the decision situation is message framing (Chang et al., 2015). By carefully structuring how information is presented (Levin et al., 1998), organisations can use message frames as management tools to nudge towards meaningful cultural change, helping to align employee behaviour with CS goals (Venema & van Gestel, 2021). A decision frame relates to “the decision-maker's conception of the acts, outcomes, and contingencies associated with a particular choice” (Tversky & Kahneman, 1981, p. 453). Depending on which aspects of the decision situation are part of the adopted frame, different motives might drive environmental behaviour (Lindenberg & Steg, 2007). Three of them have been previously identified as particularly relevant: emotional motives (“to feel better right now”), normative motives (“to act appropriately”), and gain motives (“to guard and improve one's resources”) (Lindenberg & Steg, 2007, p. 119).

Whereas emotional motives can trigger fast and affective reactions towards intended behaviour change (Lindenberg & Steg, 2007), thus targeting System 1 processes (Kahneman, 2012), normative and gain motives prompt individuals to engage in more long-term and reflective thinking (Lindenberg & Steg, 2007), thus targeting System 2 processes (Kahneman, 2012). As with many decisions concerning ESB (Sabbir & Taufique, 2022), choosing an employee vehicle in an automotive company probably involves both systems. On the one hand, people take time for evaluation and reflection to make a high-involvement product decision that does not happen daily (Rezvani et al., 2018). On the other hand, we expect the decision to be affected by emotions that result from close ties with the company and brand. Thus, in the present study, we formulated an emotional message to target System 1 processes as well as normative and gain messages to target System 2 processes. We will explain those framing interventions and their mechanisms in the following.
Emotional framing

Emotional framing refers to the presentation of information in ways that arouse feelings of alignment “with the audience's passions, desires, and aspirations” (Giorgi, 2017, p. 717). It activates goals that promise to improve the way one feels (Lindenberg & Steg, 2007). Companies can use emotional framing to evoke positive feelings in line with the corporate culture, thereby encouraging desirable behaviour change (Giorgi, 2017). The experience of positive emotions has been identified as important yet understudied mechanism that explains ESB (Norton et al., 2015). In automotive companies, the organisational culture is traditionally built around ICEVs: Employees are likely to experience ‘car pride’, and passion is often paraphrased as ‘having fuel in the blood’. Driving an ICEV is thus associated with positive emotions and expresses feelings of group membership (Moody & Zhao, 2019). Whereas this association is increasingly challenged by a climate-conscious public (He et al., 2021), the change is only beginning within most corporate cultures in the car industry. Alternative message frames that arouse positive emotions for EVs could serve as means to shift the feelings of employees in favour of EVs.

Porsche has been using emotional framing in marketing for decades, creating a bond between the brand and customers by appealing to their emotional state, ego, needs, and ambitions (with the key slogan ‘Follow your dreams’). Equally, Porsche employees have a strong sense of belongingness to the corporate culture and brand. However, so far, they seem to associate the latter with petrol-powered sports cars, thus feeling good by driving ICEVs. We try to change this association through an affective message that relates people's ‘hearts’ to electricity and their ‘souls’ to Porsche. We expect that the presentation of this message evokes positive feelings for EVs and thus serves as an emotional frame with a positive influence on employee EV adoption.

Normative framing

Normative framing is another mechanism to promote behaviour change via the activation of beliefs about appropriateness (Lindenberg & Steg, 2007). It may increase the degree to which individuals feel accountable for their actions, thus addressing System 2 reasoning (Beshears & Gino, 2015), by emphasising desirable social norms of an organisational culture. Social norms can be both descriptive, referring to perceptions of what is done by others, as well as injunctive,

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11 Information retrieved from company-internal communication
referring to perceptions of what ought to be done according to others (Cialdini et al., 1991). Both
descriptive and injunctive social norms are defined by informal social systems and by formal
organisational policies and procedures (Sabbir & Taufique, 2022, p. 114). Informal normative
influences are strong in organisations as employees typically belong to work groups and closely
interact with peers to fulfil their tasks (Goldstein & Cialdini, 2011). Encouraging behaviour in
line with formally defined environmental values is not easy when the actions of peers do not
correspond to the corporate vision (Norton et al., 2014). One proposed approach to activating
desirable normative beliefs and stimulating ESB is the communication of statements and appeals
made by important others - that is, by leaders supporting greener choices (Paillé et al., 2014;
Sabbir & Taufique, 2022). Leaders can act as role models, and the signals they send may be
particularly impactful (Ramus & Steger, 2000). Prior studies revealed the effectiveness of
normative messages sent on behalf of management in workplace areas including electricity
consumption and waste reduction (Chakravarty & Mishra, 2019; Charlier et al., 2021).

With our study, we test a normative frame that emphasises sustainability, thereby seeking to
promote the adoption of EVs as less environmentally harmful choice. Porsche was the first sports
car producer to decide to go fully electric back in 2015, working towards becoming net carbon
neutral across the value chain in 2030.\textsuperscript{12} This far-ranging strategic decision also means that
internal values and norms have to change. For a sports car company with successful engineers
trained in combustion engine technology, this transition is not an easy step. However, against the
theoretical background, we expect that a normative message sent on behalf of a highly respected
management team has the potential to shift organisational norms and the behaviour of employees
towards the adoption of EVs.

\textit{Gain framing}

The final message frame that we investigate emphasises the perceived gains of a desirable choice
(Lindenberg & Steg, 2007). The glorified image of driving ICEVs that may persist in the corporate
culture of an established automotive company (Held et al., 2018) may come with negative
associations of other more environmentally-friendly transportation options, which can bias people
against choosing EVs. Common biases that represent barriers to driving EVs are loss aversion,
present bias, and status quo bias (Filippini et al., 2021). Loss aversion refers to the observation

\textsuperscript{12} Information retrieved from company-internal communication
that people dislike losses more than they like comparable gains (Kahneman et al., 1991). Some losses might be particularly salient. When making a decision about which new car to order, people might place more weight on the anticipated downsides of driving an EV (e.g., lacking charging infrastructure and low EV range) than on the prospective benefits (e.g., energy cost savings). People might also be present biased by minimising the positive future outcomes of driving EVs (Filippini et al., 2021). Relatedly, status quo bias results from driving habits that people might resist changing because they mainly consider the challenges of switching to EVs (Filippini et al., 2021). To promote EVs as less environmentally harmful choices, employees must thus be able to recognise the opportunity costs of their decisions (Kristal & Whillans, 2020). By increasing the salience of the benefits of a particular choice, gain framing can encourage employees to reconsider the lens through which they see the problem (Lindenberg & Steg, 2007). It can strengthen System 2 reasoning to incorporate a broader range of consequences that people would not consider otherwise (Beshears & Gino, 2015), which might make environmentally preferred choices look more attractive.

In our study, the gain frame relates to energy cost savings of switching to an EV. Even though employee cars at Porsche are subsidised, organisational members partly need to cover the costs of driving by themselves. The share of energy costs can represent up to one sixth of employees' overall monthly operating vehicle costs. However, opportunities for reducing these expenses might go unnoticed and hence prevent behaviour change (Kristal & Whillans, 2020). To encourage employees shifting away from driving emission-intensive ICEVs, highlighting the easily hidden cost savings of opting for EVs should be a powerful approach. Thus, we expect that the presentation of a gain frame has a positive influence on employee EV adoption.

**Time-specific application of framing**

Besides testing different types of message frames, our study seeks to determine the optimal timing of their application, which is an important but underappreciated factor of successful behavioural intervention implementation (Behavioural Insights Team [BIT], 2014). According to the theory of planned behaviour (TPB), which has become the main theory in analysing ESB (Renwick et al., 2013; Sabbir & Taufique, 2022), time has a negative effect on desirable behaviour change because of the impact of various personal and external factors of influence that might lead to alterations in

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13 Information retrieved from company-internal communication
original intentions or constrain the ability to act on them (Ajzen, 1985). Although TPB assumes planned, that is, rational decision-making, rather than distinguishing between Systems 1 and 2 reasoning (Sabbir & Taufique, 2022), the argument seems relevant for the timing of nudges, including those of message frames (BIT, 2014). Prior studies of ‘just-in-time’ framing interventions refer to the need to identify ‘teachable moments’, in which people are receptive to (i.e., able to process and use) the messages conveyed (Van der Laan & Orchloska, 2022). Whereas early messaging allows people to have enough time to act on the information, informing them too early may give them time to delay their actions; the information might become less salient or be forgotten, and people might not act at all (Ericson, 2017; Sunstein, 2014). To identify the optimal timing of the proposed frames, we apply them via two communication channels at different times of the decision process: first via emails to remind employees that their car order is soon due, and second via pop-up notifications, appearing in the online employee car configurator (ECC) where vehicle orders are placed.

10.3. Methods

10.3.1. Experimental design, sample, and data collection

A randomised controlled trial (RCT) was carried out using a final sample of 170 Porsche employees over a three-month period between January and March 2022. To optimise the design of the RCT, improve our intervention material, and rule out unforeseen technical or procedural problems, a seven-month pilot field study preceded the actual experiment between June and December 2021. The data collection plan and analytical strategy were preregistered, and the experimental study obtained ethical approval by the Ethics Council of Copenhagen Business School. Although we originally planned to continue the experiment for six months until June 2022, we had to terminate the data collection prematurely due to the war in Ukraine, which heavily affected Porsche's supply chain and production possibilities, and hence constrained the availability of employee vehicles as of April 2022. Figure K1 in Appendix K provides a step-by-step overview of the research process.

Figure 1 depicts the timeline of the decision process that we studied. Employees use their company or lease cars for 12 months. After this period, the cars are sold to retail partners, and the eligible employees can choose a new model using an internal ordering system called ECC. To remind employees about ordering a new car, they receive an email eight months prior to the
upcoming car shift. For logistic reasons, employees are encouraged to complete their orders no later than six months before the upcoming car shift. We used randomly assigned message frames targeting the decision process of ordering a new car first in emails (decision prompt 1) and second in pop-up notifications, appearing in the ECC (decision prompt 2). The latter implies (and assures) that Porsche employees were treated directly before the final order decision was made, as they had to use the ECC to conclude a vehicle contract online.

Figure 1: Timeline of employees' decision process

Our sample was drawn from a population of 4,872 Porsche employees in Germany, either eligible for fully funded company cars (856 employees in managerial positions, starting from middle management) or leasing cars under favourable conditions (4,016 employees working for the company for more than 24 months and having a certain pay grade, or working in the company for more than 25 years). The population was randomly assigned to the experimental conditions based on employees' corporate identification numbers. To reduce experimental biases, employees did not know that they were part of an experiment, but were informed about the nature of our study following its completion. Figure 2 depicts the experimental design with the number of participants in each condition. It reflects a $4 \times 4$ between-subjects design with 16 combinations of control and/or treatment conditions. The first four conditions relate to the email that employees received prior to the upcoming car shift. Participants in the control condition received the email with a neutral message. Participants in the treatment conditions received the same email with one of the three message frames (emotional, normative, and gain). The second set of randomised conditions

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14 The number is attributed to employees in numerical sequence according to their entry date into the firm.
concerned the ECC. Participants in the treatment conditions received a pop-up notification with one of the frames that were also included in the emails. Participants in the control condition did not receive a pop-up notification when entering the ECC. In total, 430 employees with an upcoming car shift were identified to receive an email. Of those employees who obtained the email, 170 were considered for the statistical analysis, as they completed their orders after receiving the email and before the end of the study. The remaining observations had to be dropped.

The frames took the form of visual messages with a short, written statement included (see Figure 3). The emotional frame associates EVs with Porsche as a brand through the slogan ‘the heart electric, the soul Porsche’. The normative frame calls on employees to ‘be an ambassador for a sustainable Porsche future’. The gain frame suggests employees could ‘exchange gasoline for electricity and reduce their monthly operating costs by EUR 100’. The messages were designed together with the unit responsible for the ordering of employee cars (called Sales Company Cars and Direct Sales). For three reasons, collaborating with this unit was important. First, they could share invaluable inside knowledge of the behavioural barriers that restrain employees from choosing EVs. Second, upon evaluation of the barriers, the unit created visuals in line with and recognisable as brand communication. Third, external researchers would not have been able to

Figure 2: Experimental design of the study
access internal software and databases, so the unit served as a data collector and gave invaluable feedback on the context.

Figure 3: Control and treatment conditions in the emails and the ECC

To execute the interventions, the Sales Company Cars and Direct Sales unit sent the four versions of the experimental emails to employees with an upcoming car shift approaching eight months later. Emails were sent on a weekly basis, and the dates of sending them were manually entered into the data sheet that contained anonymised information for each participant. Order details on the chosen vehicle and the time of the order were automatically captured by the ECC system and subsequently integrated into the data sheet. The pool of cars that employees could choose from consisted of one BEV model (Taycan), two PHEV models (Cayenne and Panamera), and five ICEV models (Cayenne, Macan, Panamera, 718 and 911). Details of the ECC interface and the available car schemes are included in the Appendix.

15 Details of the ECC interface and the available car schemes are included in the Appendix.
10.3.2. Statistical analyses

Statistical analyses to test the proposed frames were performed using the software package StataSE 17. We used logistic regressions to transform the following (linear) model and estimated its coefficients:

\[ E_i = \alpha_i + \sum_{j=1}^{4} \beta_j D_{i,j} + \sum_{k=1}^{4} \gamma_k C_{i,k} + \delta \cdot X_i + \epsilon_i \]  

(1)

\( E_i \) is the binary dependent variable that indicates whether participant \( i \) chooses an EV. In addition to overall EV (PHEV and BEV) choices, we consider a slightly altered dependent variable that only accounts for BEV choices. We do so since the message frames include illustrations of the fully electric Porsche Taycan and thus particularly target BEVs. This might result in a stronger nudging effect for BEV orders specifically. \( D_{i,j} \) reflects a set of dummy variables that denote the email condition \( j (j = 1, 2, 3, 4) \) of participant \( i \). \( C_{i,k} \) relates to a similar set of dummy variables for the ECC condition \( k (k = 1, 2, 3, 4) \) of participant \( i \). \( X_i \) represents a vector for respondent-specific controls.

We included eligibility for company cars as a covariate to control for differences in vehicle choices due to heterogeneous cost structures between fully funded company cars and chargeable, but highly subsidised, leasing cars. In addition, we controlled for the vehicle type (ICEV, BEV, PHEV) selected in the prior car shift (\( t_0 \)) to account for habitual vehicle choices that might influence the present car choice. \( \alpha_i \) denotes the intercept and \( \epsilon_i \) the residual. We are interested in the parameters \( \beta_j \) and \( \gamma_k \), which indicate the estimated values of the average treatment effects.

As recommended for logistic regressions (Mehmetoglu & Jakobsen, 2017), we determined the goodness of fit of the estimated models and confirmed that the models were correctly specified after performing the regressions. We also tested for the absence of multicollinearity.
10.4. Results

10.4.1. Descriptive results

Table 1 presents descriptive statistics for our sample. 66.5% of participants chose EVs\(^{16}\) in the focal car shift \((t_1)\) compared to 45.9% in the prior car shift \((t_0)\). 80.6% of participants are male, reflecting the low share of female employees across the organisation (Porsche, 2021). 14.7%, or 25 participants, are eligible to company cars. The remaining 145 employees are eligible to lease cars. The average spread between the email and the vehicle order is 2.8 weeks. For the email trial, the average share of EV choices is higher in all treatment groups (63.8%, 65.9%, and 82.2%) than in the control group (52.6%). For the ECC trial, the direction of the treatment effects is mixed.

Table 1: Descriptive statistics

<table>
<thead>
<tr>
<th></th>
<th>Email</th>
<th>ECC</th>
<th>Full sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>EV in (t_1)</td>
<td>Control</td>
<td>.526 (.506)</td>
<td>.667 (.479)</td>
</tr>
<tr>
<td>EV in (t_0)</td>
<td>(.421) (.505)</td>
<td>.511 (.501)</td>
<td>(.508) (.506)</td>
</tr>
<tr>
<td>Male</td>
<td>.763 (.431)</td>
<td>.787 (.414)</td>
<td>.818 (.392)</td>
</tr>
<tr>
<td>Comp. car</td>
<td>.263 (.446)</td>
<td>.128 (.337)</td>
<td>.152 (.364)</td>
</tr>
<tr>
<td>Spread</td>
<td>2.921 (.715)</td>
<td>3.150 (.217)</td>
<td>3.121 (.215)</td>
</tr>
<tr>
<td>N</td>
<td>38</td>
<td>47</td>
<td>44</td>
</tr>
</tbody>
</table>

*Note: Standard deviations are reported in parentheses.*

10.4.2. Main logistic regression results

The results of the logistic regressions that test the three frames are reported in columns 1 and 2 of Table 2. Column 1 presents the estimated treatment effects on overall EV choices expressed in logit coefficients. Column 2 displays data of the same model with BEV orders as dependent variables. As we shall soon see, our results mask the importance of intervention timing; but we begin by describing the aggregate results.

\(^{16}\) 40.6% PHEVs and 25.9% BEVs (Figure 3A4)
Table 2: Effects of nudges on employees’ EV uptakes reported in logit coefficients

<table>
<thead>
<tr>
<th></th>
<th>(1) EV in t₁</th>
<th>(2) BEV in t₁</th>
<th>(3) EV in t₁</th>
<th>(4) BEV in t₁</th>
<th>(5) EV in t₁ if ICEV in t₀</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Email</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional frame</td>
<td>-0.019</td>
<td>0.721</td>
<td>3.104***</td>
<td>2.695**</td>
<td>5.972***</td>
</tr>
<tr>
<td></td>
<td>(0.525)</td>
<td>(0.659)</td>
<td>(0.984)</td>
<td>(1.330)</td>
<td>(2.038)</td>
</tr>
<tr>
<td>Normative frame</td>
<td>0.687</td>
<td>1.091</td>
<td>1.862**</td>
<td>2.878**</td>
<td>5.103**</td>
</tr>
<tr>
<td></td>
<td>(0.505)</td>
<td>(0.677)</td>
<td>(0.918)</td>
<td>(1.375)</td>
<td>(2.038)</td>
</tr>
<tr>
<td>Gain frame</td>
<td>1.319***</td>
<td>1.415**</td>
<td>3.094***</td>
<td>2.471*</td>
<td>6.470***</td>
</tr>
<tr>
<td></td>
<td>(0.643)</td>
<td>(0.689)</td>
<td>(1.192)</td>
<td>(1.312)</td>
<td>(2.002)</td>
</tr>
<tr>
<td><strong>Spread</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.662**</td>
<td>0.407</td>
<td>2.007***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.261)</td>
<td>(0.322)</td>
<td>(0.692)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Email x spread</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional frame x spread</td>
<td>-1.032***</td>
<td>-0.631</td>
<td>-2.108***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.318)</td>
<td>(0.386)</td>
<td>(0.733)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normative frame x spread</td>
<td>-0.342</td>
<td>-0.676</td>
<td>-1.614**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.325)</td>
<td>(0.528)</td>
<td>(0.748)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gain frame x spread</td>
<td>-0.627*</td>
<td>-0.341</td>
<td>-1.926***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.346)</td>
<td>(0.358)</td>
<td>(0.707)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ECC</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional frame</td>
<td>-0.113</td>
<td>-0.392</td>
<td>-0.424</td>
<td>-0.648</td>
<td>-1.091</td>
</tr>
<tr>
<td></td>
<td>(0.556)</td>
<td>(0.681)</td>
<td>(0.575)</td>
<td>(0.700)</td>
<td>(0.824)</td>
</tr>
<tr>
<td>Normative frame</td>
<td>0.692</td>
<td>1.240*</td>
<td>0.686</td>
<td>1.031</td>
<td>-0.052</td>
</tr>
<tr>
<td></td>
<td>(0.582)</td>
<td>(0.690)</td>
<td>(0.625)</td>
<td>(0.683)</td>
<td>(0.846)</td>
</tr>
<tr>
<td>Gain frame</td>
<td>-0.608</td>
<td>0.030</td>
<td>-0.716</td>
<td>-0.221</td>
<td>-1.125</td>
</tr>
<tr>
<td></td>
<td>(0.550)</td>
<td>(0.664)</td>
<td>(0.576)</td>
<td>(0.694)</td>
<td>(0.820)</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>170</td>
<td>170</td>
<td>170</td>
<td>170</td>
<td>92</td>
</tr>
<tr>
<td>McFadden's R²</td>
<td>0.211</td>
<td>0.291</td>
<td>0.266</td>
<td>0.309</td>
<td>0.249</td>
</tr>
<tr>
<td>Wald's X²</td>
<td>34.290***</td>
<td>39.810***</td>
<td>41.810***</td>
<td>38.940***</td>
<td>20.810***</td>
</tr>
<tr>
<td>-LL</td>
<td>85.578</td>
<td>68.851</td>
<td>79.567</td>
<td>67.153</td>
<td>47.905</td>
</tr>
</tbody>
</table>

Note: All results are based on logistic regressions. Additional controls include effects of company cars and vehicle choices (ICEV, PHEV, BEV) in t₀. Heteroscedastic robust standard errors in parentheses. *p < 0.1, **p < 0.05, ***p < 0.01.

Looking at Columns 1 and 2, evidence in relation to the tested frames is mixed. The effect of the emotional frame is not significant (neither in the email nor in the ECC). For the normative frame, we discover a positive and significant effect on BEV choices when applied in the ECC. However, the effect does not hold for overall EV choices and is thus of limited reach. For the gain frame, we find a positive and significant impact when applied in the email, with the odds of choosing an EV being 3.7 (and a BEV being 4.2) times as high as for the control group (Table K2). Notably, however, its effect is not significant when applied in the ECC. In addition to our main model, we
verified the combined impacts of the message frames applied in emails and in ECC pop-up notifications across the two times (Table K1), indicating positive coefficients, but non-significant results.

10.4.3. Exploratory analysis of message frames applied in emails

Our experimental design allowed us to measure the spread (in calendar weeks) between the weeks participants received the emails and the weeks they placed their orders in the ECC across experimental conditions. The spread varied between zero to ten weeks. We were interested in estimating the conditional average treatment effects depending on how much time the participants took to complete their orders after receiving the message frames via emails. To do so, we included an interaction term between the email condition and the spread in our main model. Columns 3–5 in Table 2 report the regression results in logit coefficients.\(^{17}\) Columns 3 and 4 present the estimated treatment effects on EV and BEV choices, respectively. Column 5 displays results for the impacts on EV choices for participants who selected an ICEV in the prior car shift. We expected the frames to be particularly powerful for this subsample, as levers to shift choices from ICEVs to EVs.

The results in columns 3–5 show significantly positive coefficients for the three email treatment variables. This finding suggests that all frames increase the odds of choosing an EV if the vehicle order is completed immediately after receiving the email. Likewise, the estimated coefficients of the spread variable are significantly positive in columns 3 and 5, indicating that participants who received the control email are more likely to choose an EV the more time they take to make their decisions after receiving the emails. The estimated interaction effects between the frames applied in emails and the spread are negative. This points to the declining impact of the frames applied in emails over time, with highly positive effects immediately after receiving the message frames, but gradually decreasing effects as weeks pass until the vehicle orders are made. No treatment effects of the same frames applied in the ECC can be found in columns 3–5.

To get a better understanding of how the impacts of the three frames applied in emails differ over time, we calculated their marginal effects at the values of the spread following the logistic regression results presented above. Figure 4 displays the predictive margins expressed in probabilities based on the regression results in columns 3–5 in Table 2. The graphs show that

\(^{17}\)Table K2 reports the results of the same models expressed in odds ratios to give an impression of the effect sizes of the frames applied in emails.
under the emotional frame, the probability of choosing an EV is up to three times higher (Model 3) compared to the control group if the vehicle order is made in the same week as the nudge recipients are being treated. This effect decreases sharply over time, with the frame losing its effectiveness compared with the control group after three weeks for EV choices (Models 3 and 5) and after four weeks for BEV choices (Model 4). The probability of choosing an EV under the normative frame is up to 2.4 times higher (Model 3) compared to the control group when the treated participants complete their vehicle orders in the same week as receiving the email. Except for BEV choices specifically (Model 4), the impact of this frame has a positive slope, indicating a gradual increase over time in absolute terms. However, in comparison to the control group, the impact gradually diminishes with the intervention losing its effectiveness five (Model 3) or three weeks (Model 5) after being treated. By contrast, the effect of the gain frame is remarkably persistent over time. Compared to the control group, the probability of choosing an EV is up to three times higher when making an order immediately after receiving the email (Model 3). The positive effect of the gain frame holds up to seven weeks (Model 4) from the point in time when the email is received. Thereafter, employees in the control group are more likely to choose an EV.

![Figure 4: Effects of frames applied in emails depending on spread](image)

In a nutshell, our results indicate that the tested message frames applied in emails are more likely to lead people to opt for EVs if they make their decisions directly after receiving the email and that the effects of these frames disappear over time. Overall, the effectiveness of the tested frames is thus conditional on two factors. First, the communication channel, and thus the timing of the
behavioural stimuli matters, as the frames work better when applied in the emails than in the ECC. Second, the durability of these effects is limited (compared to the control group). Yet, trends evolve differently depending on the types of frames, with the gain frame having the most significant impact regardless of the spread.\footnote{Figure K5 in the Appendix visualises the calculated differences in probabilities of choosing an EV between the control and gain frame email conditions over the weeks.} We also find that the investigated frames have longer-lasting effects on BEV orders than on overall EV choices, as anticipated, as the visuals of the applied frames illustrate a BEV (the Taycan).

As a robustness check, we split our sample into two groups to distinguish roughly half of the participants who made their orders in the first two weeks after receiving the message frame via emails from those who took more time to complete their orders. Figure 5 displays graphical results from three regressions that accounted for these sample variations. The width of the lines indicates the 95\% confidence interval of the parameters. Those lines that do not intersect the null line (in red) reflect significant treatment effects. The illustration confirms our findings above. We see that all frames applied in emails have significantly positive effects on EV choices if orders are made within two weeks after being treated. For the full sample (with participants making their orders between zero and ten weeks after receiving the email), only the gain frame has a significantly positive effect on employee EV choices and hence, ESB.
Finally, to explore the environmental impact of the frames applied in emails, we calculated the average CO₂ emissions associated with employees’ vehicle choices for each of the four email conditions. Figure 6 shows that the average CO₂ emissions per chosen vehicle are 141 g/km, 115 g/km, 114 g/km, and 75 g/km for the control, emotional, normative, and gain framing conditions, respectively.

For further details on the calculations, refer to Appendices I and J.
Figure 6: Average CO₂ (g/km) of chosen vehicles per email condition

Figure 7 provides further details on the average CO₂ (g/km) reduction rates across weeks for employees in the gain framing condition compared to those in the control condition. Given the probabilities calculated by our regression model, we can assume that, on average, 104 g/km CO₂ are saved per vehicle choice for people making their car choices in the first week after receiving the gain framing email. This rate decreases steadily and becomes negative for employees making their car choices five weeks after being treated.

Figure 7: Average CO₂ (g/km) reduction across weeks (gain frame vs. control)
10.5. Discussion and conclusion

The aim of this study was to assess the application of message framing as a management practice to promote ESB in support of organisational change for CS. The effectiveness of all three tested frames could only be confirmed when applied in emails, but not in the ECC. However, the durability of these effects was limited. Overall, the gain frame applied in emails had the strongest and most durable effect on electric car choices and thus the sustainable behaviour of employees.

Our study provides two main contributions to the CS and organisational behaviour literature. First, it expands prior research in the field by exploring the application of nudging in the form of message framing as a novel management practice to encourage ESB. To the best of our knowledge, this has not been done previously. Existing studies primarily focus on environmental beliefs as the main determinants of sustainable behaviour in the workplace and emphasise the relevance of organisational policies, such as training and awareness campaigns, that make ecological concerns salient to employees (Paillé et al., 2014; Pellegrini et al., 2018; Raineri & Paillé, 2016; Uddin et al., 2021). With our paper, we respond to a call for integrating a broader range of mechanisms driving ESB (Norton et al., 2015). Our data supports the findings of Sabbir and Taufique (2022), suggesting that both Systems 1 and 2 processes of reasoning influence pro-environmental workplace actions. This also confirms the insights of prior framing literature (Flores & Jansson, 2022; Lindenberg & Steg, 2007; Steg et al., 2014; Rezvani et al., 2018; Westin et al., 2020), showing that multiple motives can drive green choices.

If applied at the right time, we demonstrate that emotional framing can tap System 1 processes, whereas normative and gain framing can tap System 2 processes for sustainable behaviour change. While the short longevity of the emotional frame reflects the anticipated fast and intuitive nature of System 1 reasoning (Kahneman, 2012; Lindenberg & Steg, 2007), the longer durability of the normative and disclosure frames resonates with their anticipated influence on slower and more deliberative System 2 processes (Kahneman, 2012; Lindenberg & Steg, 2007).

Considering the whole study period and comparing our results with the control group, emphasising cost savings works better than defining sustainability as a salient corporate value through a normative message frame. This partly contradicts previous literature that proposed environmental beliefs as a pre-condition for ESB (Paillé et al., 2014; Pellegrini et al., 2018; Temminck et al., 2015; Uddin et al., 2021). Strengthening normative environmental beliefs may be particularly relevant in those situations where environmental goals and gain goals conflict with
each other, that is, where green choices are very costly. Encouraging sustained green behaviour might thus specifically rely on emphasising normative reasons so that people want to act green because they think it is the right thing to do (Steg et al., 2014). By contrast, in the context of our study, we focused on emotional, gain and normative goals that complemented each other. Similar to prior studies on the EV adoption by private consumers (Rezvani et al., 2018), we showed that interventions targeting affective and gain motives are effective means to support the ultimate normative environmental goal in this case. One explanation for the strong and durable effect of the gain frame in our study may relate to employees’ dominant beliefs in a corporate culture that traditionally does not reflect sustainability. Employees may not yet hold deep environmental values and thus respond more frequently to messages that emphasise self-enhancement rather than environmental norms (Steg et al., 2014). The effect of the gain frame may thereby be reinforced by positive emotions associated with the anticipated gains (Flores & Jansson, 2022; Rezvani et al., 2018). Hence, different motives could also relate to and mediate each other. Whereas people sharing strong personal environmental norms may feel good by following the messages conveyed by normative frames (Rezvani et al., 2018), those sharing self-enhancement norms may rather experience positive emotions in response to gain framing.

The second main contribution of our study relates to the revealed importance of the context in applying interventions for encouraging ESB. Thereby, we address a gap in existing research, which mainly focuses on influencing the person rather than their environment (Norton et al., 2015). Beyond individual characteristics, we find that people respond differently to identical message frames depending on when they occur, thus providing insights into the contextual conditions under which people are receptive to behaviour change. We generated these insights thanks to our experimental methodology, which allowed us to operationalise and control for the context. This is rare among studies investigating ESB (Norton et al., 2015). As experiments permit inferences about causality and thus allow measuring actual treatment effects, they ensure high internal validity (Aguinis & Bradley, 2014). At the same time, we guarantee high external validity of our research design by using real behavioural data from field observations rather than self-reported evidence. The latter concerns a frequent limitation of studies investigating ESB, which might lead to gaps between subjective measures and the objective actions of employees (Chaudhary, 2020; Paillé et al., 2014; Pellegrini et al., 2018; Raineri & Paillé, 2016). Drawing causal inferences from observational data, we find that the timing of interventions matters. Whereas the evaluated frames had positive effects on ESB when targeting the focal decision process at an early stage, they did not work when addressing the same process at a later point.
Comparing our results with the insights from prior literature (Van der Laan & Orchloska, 2022), we infer that the optimal timing of behavioural interventions in the workplace depends on the choices they address. On the one hand, frequently recurring decisions with short-term impacts, such as selecting sustainable food choices in workplace canteens, may be influenced at a late stage of the decision process, prompting people to revise their choices just before they pay. On the other hand, less frequent high-involvement decisions with long-term consequences, like selecting an employee car once per year, may only be influenced at an early stage of reasoning, before intention formation initially takes place.

Our findings have managerial implications for organisations tasked to encourage their employees to ‘walk the talk’ and achieve organisational change for CS. Most importantly, we show that the application of message framing can be a powerful approach to promote green choices of employees, who may not already possess strong pro-environmental beliefs and attitudes. This is relevant for organisations in many industries that increasingly move towards CS although their business models and associated workplace cultures traditionally do not reflect strong pro-environmental concerns (Sroufe, 2017). Ensuring that employees act in alignment with overarching sustainability strategies is crucial for delivering towards public expectations and preserving the credibility of corporations (del Brío et al., 2007; Paillé et al., 2014). In this regard, our results reveal the power of message frames that resonate with the feelings and beliefs of employees. First, our findings support the success of emotional frames to target System 1 processes. Considering their short longevity, they should best be applied in contexts where employees tend to act quickly and affectively upon a prompt. In a fast-moving work environment, frequently recurring and habitually performed choices, on which employees do not spend much time, such as switching off the lights or throwing out garbage (Sabbir & Taufique, 2022), seem suitable to be addressed by such frames.

By contrast, high-involvement decisions of environmental relevance, for which employees take time for reflection, like eco-innovation processes (Buhl et al., 2016), might rather be addressed by frames that target System 2 reasoning with more durable effects. In this regard, our study specifically implies the power of emphasising monetary benefits associated with ESB. The practical relevance of this finding should be interpreted with caution though. Gain framing can provide a cost-efficient way to encourage green behaviour in those specific areas where overarching environmental objectives come along with individual benefits, such as situations where employees use their employers' products and technologies at a private share of operating costs. Managers could, for example, encourage employees to make decisions in favour of
environmentally-friendly workplace equipment, such as business laptops and phones that are partly used and charged at home (George & Jayakumar, 2017), by disclosing easily hidden cost-saving opportunities. Yet, the implications of this finding are limited for the many domains, where pro-environmental actions do not offer individual benefits (Lindenberg & Steg, 2007). For example, strategic decisions on energy-efficient corporate production practices most likely do not come with any self-interested gains for employees (Russel et al., 2016). Whereas managers could address this problem through the implementation of conventional reward schemes, this would be an expensive measure to pursue (Renwick et al., 2013). In addition, steering attention exclusively to monetary gains may risk crowding out intrinsic motivations to behave desirably (Frey & Jegen, 2001) and hence push environmental goals into the background (Lindenberg & Steg, 2007).

Ultimately, it is the normative decision lens that must be strengthened to create a green workplace culture in the long-term (Renwick et al., 2013). As our experiment has shown, employees react positively to the normative message frame that emphasises sustainability if targeting the decision-making process at an early stage, before intention formation initially takes place. Practitioners should thus continue to focus on conveying normative sustainability concerns, especially in those domains where normative and gain goals conflict with another. Yet, this should be done in a context-oriented way to connect the behavioural stimuli with the targeted decision at the right time. Whenever the circumstances allow, managers may apply emotional and gain framing as complements to support normative goals (Lindenberg & Steg, 2007; Steg et al., 2014). Based on our findings, the latter may be particularly effective when employees do not yet have strong environmental beliefs. If closely linked to environmental goals, ecological attitudes could develop indirectly over time. Once sustainable choices become habitually performed, people tend to experience more positive feelings toward the behaviour, which can eventually transform into pro-environmental attitudes and sustainable norms (Sabbir & Taufique, 2022).

10.6. Limitations and future research

Our paper has several limitations that point to potential directions for future research. First, all participants in our study are employees in a single automotive organisation, operating in the high-end car segment with strong corporate branding. The message frames we tested were tailored to the organisational context and their transferability to other organisational settings might be questioned. Future studies should build on the insights gained from our results and design and test
organisation-specific framing interventions suited to address ESB in other workplaces and industries.

A second limitation concerns the short intervention period of our main study. Due to the production interruption of vehicles at the target company, resulting from the war in Ukraine, we had to terminate the data collection after three months. This led to a smaller than initially expected sample size, which compromised the statistical power of our results and constitutes a clear limitation. It also prevented us from studying the combined impacts of different frames, as the number of participants in the respective groups was too small to draw statistically significant inferences. Future research should envision larger sample sizes and explore the relations among frames. It would also be interesting to further experiment with the immediate and over-time effects of other nudging types.

Finally, our study focused exclusively on the impact of message frames as management tools to promote ESB. However, organisations typically rely on a complex package of diverse measures to promote responsible behaviour of employees (Norton et al., 2015). Future research could explore the effects of message frames in combination with other types of nudges and choice architecture as well as more conventional management tools, such as training and awareness campaigns that focus on the knowledge aspect of sustainable behaviour. Gaining insights into the complementarity of different policies is critical for managers to design effective workplace-intervention packages that promote organisational change for CS.

10.7. Acknowledgments

We thank the Dr. h.c. F. Porsche AG, particularly Alexander Schmidt, Fabian Kalis, Sebastian Walther and Max Fankhänel of the Sales Company Cars and Direct Sales unit, for their careful data collection and valuable advice on interpreting the data. Furthermore, we thank Caroline Schneider of the same unit for the brand-related input and the creation of the visuals. Finally, yet importantly, we thank Maximilian Steiner from the Politics and Society unit for his invaluable contribution in terms of managing the Porsche Sustainability Council and coordinating the study's working group.
10.8. Disclosure

Lucia Reisch is the Speaker of the Porsche Sustainability Council. The present study has been supported by the Porsche Company by providing access to anonymised data from the company's ECC as well as being available for clarifying interviews before and throughout the study.
10.9. References


10.10. Appendix I: Method for calculation of CO₂ emissions

We base our calculation of CO₂ emissions (g/km) on the data provided by Porsche for each vehicle type available under the following link: https://www.porsche.com/international/fuel-consumption/. Porsche reports fuel consumption and CO₂ emissions based on the Worldwide Harmonised Light Vehicle Test Procedure (WLTP), which relies on real driving data with different average speeds: low, medium, high, and extra high. We used the lowest and highest value provided by Porsche to calculate the average CO₂ emissions for each of the chosen vehicle types for further estimations. For PHEV models, the reported CO₂ emissions by Porsche are based on weighted consumption values (fuel consumption in l/100 km and electricity consumption in kWh/100 km). According to the WLTP, electricity consumption is assumed to be based on renewable sources of energy. In line with this definition, Porsche’s internal charging infrastructure provides certified green electricity. Yet, we cannot control for the energy mix that employees use at home to charge their vehicles. This infers that our calculations may be slightly more optimistic than actual emission values, which constitutes a limitation of our study.
We use the results of our primary model (see specification (3) in Table 2) to calculate the expected difference in CO$_2$ emissions between the gain frame and control groups over time. Formally, this difference in averages can be expressed as follows:

\[
\Delta \mathbb{E}(CO_2|T = t) \equiv \mathbb{E}(CO_2|\text{Group} = \text{gain frame}, T = t) - \mathbb{E}(CO_2|\text{Group} = \text{control}, T = t)
\] (1)

According to the law of iterated expectations, we can rewrite the two terms on the right-hand side of equation (1) as follows:

\[
\mathbb{E}(CO_2|\text{Group} = \text{gain frame}, T = t) =
\]

\[
P(Car = BEV \lor PHEV|\text{Group} = \text{gain frame}, T = t)
\]

\[
\mathbb{E}(CO_2|\text{Group} = \text{gain frame}, T = t, Car = BEV \lor PHEV)
\]

\[
+ P(Car = ICEV|\text{Group} = \text{gain frame}, T = t) \mathbb{E}(CO_2|\text{Group} = \text{gain frame}, T = t, Car = ICEV)
\]

\[
\equiv a
\]

\[
\mathbb{E}(CO_2|\text{Group} = \text{control}, T = t) =
\]

\[
P(Car = BEV \lor PHEV|\text{Group} = \text{control}, T = t)
\]

\[
\mathbb{E}(CO_2|\text{Group} = \text{control}, T = t, Car = BEV \lor PHEV)
\]

\[
+ P(Car = ICEV|\text{Group} = \text{control}, T = t) \mathbb{E}(CO_2|\text{Group} = \text{control}, T = t, Car = ICEV)
\]

\[
\equiv b
\]

In addition, we assume that CO$_2$ emissions depend only on the selected vehicle type, i.e., the level of emissions is conditionally independent of time and the different intervention/control groups, given the type of car.

\[
\mathbb{E}(CO_2|\text{Group} = \text{gain frame}, T = t, Car = BEV \lor PHEV)
\]

\[
= \mathbb{E}(CO_2|\text{Group} = \text{control}, T = t, Car = BEV \lor PHEV)
\]

\[
= \mathbb{E}(CO_2|BEV \lor PHEV) \equiv c
\]

\[
\mathbb{E}(CO_2|\text{Group} = \text{gain frame}, T = t, Car = ICEV)
\]

\[
= \mathbb{E}(CO_2|\text{Group} = \text{control}, T = t, Car = ICEV) = \mathbb{E}(CO_2|ICEV) \equiv d
\]

Putting it all together, equation (1) can be expressed in a much simpler way, where (a-b) is the difference in predicted probabilities given time $t$, as shown in Figure K5, and (c-d) is simply a constant (the difference in average CO$_2$ emissions between BEV/PHEV and ICEV, as given by Porsche).

\[
\Delta \mathbb{E}(CO_2|T = t) = a \times (c - d) - b \times (c - d) = (a - b) \times (c - d)
\]
## 10.12. Appendix K: Additional tables and figures

**Table K1: Effects of pooled message frames in emails and ECC on employees’ EV uptakes**

<table>
<thead>
<tr>
<th></th>
<th>(1) Logit coefficient</th>
<th>(2) Odds ratio</th>
<th>(3) Logit coefficient</th>
<th>(4) Odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email</td>
<td>.571 (.421)</td>
<td>1.771 (.744)</td>
<td>-.470 (.863)</td>
<td>.625 (.540)</td>
</tr>
<tr>
<td>ECC</td>
<td>.066 (.481)</td>
<td>1.068 (.513)</td>
<td>-.912 (.815)</td>
<td>.402 (.327)</td>
</tr>
<tr>
<td>Email x ECC</td>
<td>1.387 (.978)</td>
<td>4.004 (3.917)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| N        | 170                    | 170            |                        |                |
| McFadden's $R^2$ | 0.161               | 0.169          |                        |                |
| Wald's $X^2$   | 24.500***             | 26.790***      |                        |                |
| -LL       | 91.025                 | 90.087         |                        |                |

*Note: All results are based on logistic regressions. Heteroscedastic robust standard errors in parentheses. *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.  

**Table K2:** Effects of message frames on employees’ EV uptakes reported in odds ratios

<table>
<thead>
<tr>
<th></th>
<th>(1) EV in t₁</th>
<th>(2) BEV in t₁</th>
<th>(3) EV in t₁</th>
<th>(4) BEV in t₁</th>
<th>(5) EV in t₁ if ICEV in t₀</th>
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</thead>
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<td><strong>Email</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Emotional frame</td>
<td>.967</td>
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<td>22.295</td>
<td>14.805</td>
<td>392.389</td>
</tr>
<tr>
<td></td>
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<td>(1.474)</td>
<td>(21.947)</td>
<td>(19.685)</td>
<td>(799.578)</td>
</tr>
<tr>
<td>Normative frame</td>
<td>2.006</td>
<td>2.927</td>
<td>6.436</td>
<td>17.770</td>
<td>164.462</td>
</tr>
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<td>(1.981)</td>
<td>(5.908)</td>
<td>(24.435)</td>
<td>(335.197)</td>
</tr>
<tr>
<td>Gain frame</td>
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<td>4.196**</td>
<td>22.074</td>
<td>11.831*</td>
<td>645.388***</td>
</tr>
<tr>
<td></td>
<td>(2.400)</td>
<td>(2.955)</td>
<td>(26.319)</td>
<td>(15.523)</td>
<td>(1292.325)</td>
</tr>
<tr>
<td><strong>Spread</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.939**</td>
<td>1.502</td>
<td>7.440</td>
<td></td>
<td>(5.147)**</td>
</tr>
<tr>
<td></td>
<td>(.507)</td>
<td>(.484)</td>
<td>(5.147)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Email x spread</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional frame x spread</td>
<td>.356***</td>
<td>.532</td>
<td>.121***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.113)</td>
<td>(.205)</td>
<td>(.089)</td>
<td></td>
<td></td>
</tr>
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<td>Normative frame x spread</td>
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<td>.509</td>
<td>.199**</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>(.231)</td>
<td>(.269)</td>
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<td></td>
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<td>.711</td>
<td>.146***</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>(.185)</td>
<td>(.255)</td>
<td>(.103)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ECC</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional frame</td>
<td>.893</td>
<td>.660</td>
<td>.654</td>
<td>.523</td>
<td>.336</td>
</tr>
<tr>
<td></td>
<td>(.499)</td>
<td>(.443)</td>
<td>(.376)</td>
<td>(.366)</td>
<td>(.277)</td>
</tr>
<tr>
<td>Normative frame</td>
<td>2.013</td>
<td>3.322*</td>
<td>1.985</td>
<td>2.804</td>
<td>.949</td>
</tr>
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<td>(1.240)</td>
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<td>(.803)</td>
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<td>Gain frame</td>
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<td>.802</td>
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<td>(.281)</td>
<td>(.557)</td>
<td>(.266)</td>
</tr>
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<td>McFadden's R²</td>
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<td>Wald's X²</td>
<td>34.400***</td>
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*Note:* All results are based on logistic regressions. Heteroscedastic robust standard errors in parentheses. *p < 0.1, **p < 0.05, ***p < 0.01.
**Figure K1:** Flowchart of the research process

**Figure K2:** Overview of available employee car models

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<td>Taycan / Taycan 4 Cross Turismo</td>
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**Figure K3:** ECC interface

**Figure K4:** Share of vehicle types per car shifts
**Figure K5:** Difference in predicted probabilities of choosing an EV between gain frame and control email conditions
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